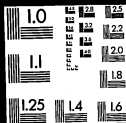


1 2 3 4 5 6 7 8 9 10 11 12  
CENTIMETERS



14:1

# *Thomas A Edison Papers*

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ISBN 978-0-88692-887-2

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We thankfully acknowledge the vision and support of Rutgers University and the Thomas A. Edison Papers Board of Sponsors.

This edition was made possible by grant funds provided from the New Jersey Historical Commission, National Historical Publications and Records Commission, and The National Endowment for the Humanities. Major underwriting has been provided by the Barkley Fund, through the National Trust for the Humanities, and by The Charles Edison Foundation.

We are grateful for the generous support of the IEEE Foundation, the Hyde & Watson Foundation, the Martinson Family Foundation, and the GE Foundation. We acknowledge gifts from many other individuals, as well as an anonymous donor; the Association of Edison Illuminating Companies; and the Edison Electric Institute. For the assistance of all these organizations and individuals, as well as for the indispensable aid of archivists, librarians, scholars, and collectors, the editors are most grateful.

**START**

**246**

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**PATENT SERIES  
PATENT APPLICATION FOLIOS**

**Patent Series**

**Patent Application Files**

Folio # 870      Disc Sound Records

Serial #          710150

Primary Applicant: Edison, Thomas A

Date Executed:    7/15/1912



[PHOTOCOPY]

Folio No. 170

Serial No. 710150

Applicant.

Address.

Thomas A. Edison

Title Disc Sound Records

Filed July 18, 1912

Examiner's Room No. 379

Assignee

Ass't Exec.

Recorded

Libr

Page

Patent No. Druffed

Issued

See Mr. Edison's Records in files

ACTIONS.

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710150

*Dyer & Hodge  
Assoc.  
Atty*

FRANK L. DYER,  
Counsel,  
Orange, New Jersey.

# Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,  
a citizen of the United States, residing and having a Post Office address at  
West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

## DISC SOUND RECORDS

set forth in the annexed specification; and he hereby appoints Frank L. Dyer  
(Registration No. 560), of Orange, New Jersey, his attorney, with full  
power of substitution and revocation, to prosecute this application, to make  
alterations and amendments therein, to receive the patent, and to transact all  
business in the Patent Office connected therewith.

*Thomas A. Edison*

# S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in DISC SOUND RECORDS, of which the following is a specification:

My invention relates to sound records of the type in which the record is formed upon the face or faces of a flat tablet, preferably of circular outline; and my object is to provide improved means for identifying the records and for facilitating the selection of any desired record from a large number of the same. In a general way, my invention resembles that disclosed in my application, Serial No. 596,537, filed December 9, 1910, in that it involves the placing on the record of identifying characters or indicia which are visible when the records are placed in a receptacle or filing device, such as a drawer or cabinet, designed for use therewith, it being thus possible to readily locate any desired record by merely running the eyes over the visible portions of the records in the receptacle or filing device. According to the present invention, I contemplate placing the identifying characters or indicia on the periphery of the record instead of placing the same on the face of the record adjacent the periphery, as in my prior invention above referred to, the characters or indicia thus being visible and legible even though the records are filed away very close or even in contact with each other. With my new invention, the number of records it is possible to

file in a given space is accordingly greatly increased without interference with the legibility of the identifying characters or indicia. I preferably repeat the indicia at intervals around the periphery of the records so that the same may readily be seen regardless of whether one portion or another of the periphery of the record is uppermost in the receptacle or filing device containing the same. My invention also contemplates the construction of a receptacle or filing device of such character that the characters or indicia on the records may readily be seen without the necessity of lifting the records from their places.

Other objects of my invention reside in the construction of parts and combinations of elements more fully described in the following specification and appended claims.

In order that my invention may be more fully understood attention is hereby directed to the accompanying drawings forming a part of this specification and in which -

Fig. 1 is a perspective view of a disc sound record embodying my invention;

Fig. 2 is a vertical sectional view of a cabinet for holding records such as illustrated in Fig. 1 and embodying my invention; and

Fig. 3 is a vertical cross-sectional view of one of the drawers forming a part of the cabinet illustrated in Fig. 2.

In all of the views, like parts are designated by the same reference characters.

Referring to the drawings, the record 1 has a selection or recorded matter 2 formed upon the face thereof, a blank space being left within the innermost record groove for a label or inscription 3 giving the title and other

information relating to the selection recorded at 2. A selection and label may be formed upon the face of the record opposite that shown in Fig. 1 in positions corresponding to those indicated at 2 and 2. Each of the discs, as is common, is provided with a peripheral surface 4, preferably at right angles to the opposite faces of the record and on this surface, are provided characters or indicia such as shown at 5 to designate the record, each record being provided with indicia different from those on the other records. These characters or indicia are preferably in the form of numerals, as shown, the numerals corresponding with any given selections or records being ascertainable by reference to a suitable index or catalogue, which may contain in one column the titles of the selections on the record and in an adjacent column the numbers of the records containing the selections, each number being arranged opposite the selection or selections to which it refers. When there are two selections on opposite faces of the record, the title of the selection on the face of the record which is in the forward position when the record is stood on its edge with the numbers in proper upright position for reading is preferably given in the index or catalogue ahead of that of the other selection; so that the proper face of the record can be found without reference to the labels 2. The characters or indicia are preferably repeated at intervals around the periphery of the record, the characters shown in Fig. 1 being arranged at intervals of 90 degrees around the record. While the indicia may be formed on the record in any suitable way, I prefer to press or engrave the same into the record material and to fill in the depressed portions with suitable coloring matter to make

the indicia easily visible and legible.

In Fig. 2, I have illustrated a filing cabinet suitable for the reception of the records illustrated in Fig. 1. In this cabinet, a plurality of drawers 7 and 8 are mounted to slide on supports 9 and 10, a hinged door 11 being provided at the front of the cabinet to permit access to the interior thereof and to permit the drawers 7 and 8 to be drawn forwardly out of the cabinet. Each of the drawers above mentioned comprises side members 12, a front member 13 and a rear member 14, the bottom of the drawer being formed of two members 15 mortised into the side, front and rear members and preferably inclined upwardly and inwardly. The members 15 are spaced a slight distance apart and have their inner edges bevelled so that when a record 1 is placed in the drawer, the same is rotatably supported by the bevelled edges of the members 15 and is also held from lateral movement thereby. Parallel spacing members 16 between which the records are to be placed, one record between each two adjacent spaced members, are arranged vertically in the drawers. These spacing members are held in guides 17-17 secured to the opposite sides of the drawers and provided with grooves 18-18 in which the spacing members are slidably mounted, the said members being held against downward movement by strips 19 secured to the inner faces of the guides 17. If desired, corner pieces 20 may be secured in the lower lateral inner corners of the drawers to strengthen the latter. The distance between the spacing members need be no greater than the thickness of the records and may be substantially equal thereto so that the records may be placed very close to each other. The said spacing members may also be made very thin so as to economize space and may if desired be

made of sheet metal, although I prefer to construct the same of wood. The upper edges of the records, when the latter are placed within the drawers, extend a substantial distance above the spacing members <sup>7/16</sup>so that the identifying characters or indicia on the peripheries thereof may readily be read. If the records are not arranged in the most satisfactory position for observing the indicia, they may readily be rotated to bring them into such position. The drawers may be of any suitable size, those shown in the accompanying drawings being of different sizes, the upper drawer being adapted to support, for example, ten inch records and the lower drawer twelve inch records. When it is desired to select from one of the drawers a record containing a particular selection, reference is had to the index or catalogue showing the number on the record corresponding to the particular selection and with my improved arrangement of identifying characters or indicia, it is simply necessary to run the eyes along the periphery of the records in the drawers to locate the proper record. When the record contains two selections on opposite faces, the face containing the desired selection is indicated both by the labels 3 and by the arrangement of the identifying characters on the record and the titles of the selections in the index or catalogue, as hereinbefore explained.

Having now described my invention, what I claim as new and desire to protect by Letters Patent is as follows:

1. As a new article of manufacture, a disc sound record having on the periphery thereof indicia for identifying the record, substantially as described.
2. As a new article of manufacture, a disc sound record having recurrently at intervals on the periphery

thereof indicia for identifying the record, substantially as described.

*Cancelled 7/19/15*  
3. As a new article of manufacture, a disc sound record having a peripheral surface at an angle to the face thereof, the said peripheral surface being provided with indicia for identifying the record, substantially as described.

4. As a new article of manufacture, a disc sound record having a peripheral surface at an angle to the face thereof, the said peripheral surface being provided recurrently at intervals with indicia for identifying the record, substantially as described.

*Cancelled 7/19/15*  
5. In a device of the character described, the combination of a receptacle, and a plurality of disc sound records supported in said receptacle and projecting above the same, said records having identifying indicia on the peripheries thereof, substantially as described.

6. In a device of the class described, the combination of a receptacle, and a plurality of disc sound records rotatably supported in said receptacle and projecting above the same, said records having identifying indicia on the peripheries thereof, substantially as described.

7. In a device of the character described, the combination of a receptacle having parallel spacing members, a plurality of disc sound records placed between said spacing members, and means extending transversely of said members in a substantially horizontal direction for supporting said records, said records having identifying indicia on the peripheries thereof, substantially as described.



8. As a new article of manufacture, a receptacle for disc sound records, having a bottom comprising means for rotatably supporting the records, said means being adapted to prevent lateral movement of the records, substantially as described.

9. As a new article of manufacture, a receptacle for disc sound records having a bottom comprising a plurality of members adapted to engage the records at a plurality of spaced points on the periphery thereof to support the same, substantially as described.

10. As a new article of manufacture, a receptacle for disc sound records having parallel spacing members of a height less than the diameter of the records to be supported in the receptacle and having also a bottom comprising means for rotatably supporting the records, said means being adapted to prevent lateral movement of the records, substantially as described.

*Insert 4 Claims 5, 6, 7 8/27/44*

This specification signed and witnessed this 15<sup>th</sup> day of July 1912

Thos. A. Edison

Witnesseth:

1. Friedrich Buchmann

2. Anna P. Keelin

**Oath.**

State of New Jersey } ss.,  
County of Essex }

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Lilwellyn Park, West Orange, in the County of Essex, and State of New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in DISC SOUND RECORDS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Sworn to and subscribed before me this 15<sup>th</sup> day of July, 1912

Thos. A. Edison

[Seal]

Notary Public.

Div. 23 Room 379

2-200

Paper NR, Letter

All communications respecting this application should give the serial number, date of filing, and title of invention.

Address only  
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Washington, D. C."  
J.H.D.-Sut.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

Sept. 17, 1912.

WASHINGTON

Thomas A. Edison,  
Care Frank L. Dyer,  
Orange, New Jersey.



Please find below a communication from the *EXAMINER* in charge of your application.

for Disc Sound Records, filed July 18, 1912, serial number 710,150.

6-521

*E. B. Moore*

Commissioner of Patents.

Page 5, line 4, "member" should be members.  
Claims 1, 2, 3 and 4 are drawn to a record tablet.  
Claims 8, 9 and 10 are drawn to a display rack.  
Division is required according to the provisions of rule  
42.  
Claims 5, 6 and 7 are drawn to the combination of a tablet  
and a display rack and may be retained with either group of  
claims. Such claims, however, will probably be rejected as  
aggregations of the tablet and the record, there being no  
patentable combination between a container and the thing contained.  
In amending this case, applicant should consult,  
Pooley, Jan. 9, 1912, #1,014,172, (211-Display Racks);  
Petit, Jan. 29, 1901, #666,937, (181-17).

14

IN THE UNITED STATES PATENT OFFICE.

Thomas A. Edison,           )  
DISC SOUND RECORDS,        )  
Filed July 18, 1912,        ) Room No. 379.  
Serial No. 710,150           )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of  
September 17, 1912, please amend the above entitled case  
as follows:

In line 4, page 5, change "member" to

- members - .

Cancel claims 5 to 10 inclusive.

REMARKS

The Examiner's requirement for division has  
been complied with and action on the merits of the claims  
now in the application is respectfully requested. The  
right is reserved to file a divisional application on the  
subject matter of the canceled claims.

Respectfully submitted,

THOMAS A. EDISON,

By Frazer L. Ryer  
his Attorney.

Orange, New Jersey,

July 19, 1913.

FB-KGK

Div 23 Room 379

2-260

Paper No. 4, Rej.

"The Commissioner of Patents,  
Washington, D. C."

All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

J. H. D. - Sub.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON

Sept. 13, 1913.

Frank L. Dyer,

Orange, New Jersey.

U. S. PATENT OFFICE,  
SEP 13 1913  
MAILED.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, serial number 710,150, filed July 18, 1912, for  
Disc Sound Records.

6-9031

*Thomas A. Edison*  
Commissioner of Patents.  
*Thomas Edison*

This action is responsive to the amendment filed July 21,

1913.

Claims 1 and 3 are rejected on any conventional disk record  
in view of Petit of record; Petit, Sept. 22, 1903, #739,713, (181-16);  
Wurth, Nov. 1, 1904, #773,617, (181-16) or Cowley, Eng. patent, Nov. 21,  
1903, #25,399, (181-17).

Claims 2 and 4 are rejected on the art cited, no invention  
lying in duplicating the indicia.

*W. H. Dyer*  
*on 9th. Dec.*

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON

DISC SOUND RECORDS

Filed July 18, 1912

Serial No. 710,150

Room No. 379.

HONORABLE COMMISSIONER OF PATENTS:

S I R :

In response to Office action of September 13,  
1913, please amend the above entitled case as follows:

Add the following claims:

3 ~~6~~. As a new article of manufacture, a disc sound record having indicia for identifying the record depressed recurrently at intervals in the periphery of the record, substantially as described.

A 4 ~~6~~. As a new article of manufacture, a disc sound record having indicia for identifying the record depressed recurrently at intervals in the periphery of the record, the indicia being colored to make the same readily legible, substantially as described.

*Cancelled 7/19/15*  
7. ~~The combination with a plurality of disc sound records having recurrently at intervals on their peripheries, indicia for identifying the same, of means for supporting said records with their peripheries exposed or visible, substantially as described.~~

R E M A R K S .

It is thought that the provision of a disc record having indicia as set forth in the claims is patentable over the cylinder records marked as shown in the references. Furthermore, the idea set forth in all the claims except claims 1 and 2 of duplicating the indicia around the periphery of a disc record, in which type of record only a portion of the periphery is visible at a time, would not be suggested by a cylinder record, in which the whole end of the record is visible, even if the cylinder record showed indicia repeated around its ends. But the references do not even show cylinder records having the indicia thus repeated. The facility with which the records embodying applicant's invention may be identified is thought to be clear from applicant's specifications.

Claims 5 and 6 further set forth that the indicia are depressed; claim 6 also stating that the indicia are colored to make the same readily legible.

For the above reasons all the claims are thought to be patentable and reconsideration and allowance are respectfully requested.

Respectfully,

THOMAS A. EDISON

By Frank L. Dyer

His Attorney.

Orange, New Jersey

August 27, 1914.

FB/JU

Div. 22 Room 379 S HW 2-200  
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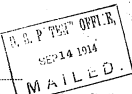
Paper No. 5  
All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Sept. 14, 1914.

Frank L. Dyer,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

T. A. Edison, Ser. No. 710,150, Filed July 18, 1912, for

Disc Sound records.

Thomas Ewing  
Commissioner of Patents.

65-2031

In re the amendment of August 28, 1914.

Claims 1 and 3 are rejected on the references and for the reasons of record. It must be held that invention is not displayed in selecting the periphery of a disc record rather than the other portions of the record for the placing of indicia at to indicate such record. This conclusion is arrived at especially in view of the references of record showing the edge of the tablet used for the placing of such indicia.

Claims 2 and 4 are rejected on the references and for the reasons of record. The placing of such indicia recurrently is held to be no invention but involving the bare duplication of the feature shown in the references cited.

Claim 5 is rejected on the references and the reasons of record and above considered. The depression of the indicia is shown clearly in the references of record, particularly Wirth, with the mold having the indicia in intaglio and therefore the record produced therefrom having the indicia in depression.

Claim 6 is rejected on the references and for the reasons of claim 5. The coloring of the indicia is believed to be no more than mechanical expediency not involving invention.



710,150,-----2.

Claim 7 is rejected as an aggregation of the record tablet and the supporting means therefor. It is not seen that any patentable combination arises from the placing of the particular tablets with a particular support. Claim 7 is furthermore rejected on the references and for the reasons above considered in view of any conventional support for the tablet.

Examiner, Div. 23.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison  
DISC SOUND RECORDS  
Serial No. 710,150  
Filed July 18, 1912

Room No. 379.

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
September 14, 1914, please amend the above entitled case  
as follows:-

Cancel claims 3, 4 and 7 and renumber claims  
5 and 6 as 3 and 4.

R E M A R K S

This case has again been carefully considered  
and the claims reduced in number, as it is thought that  
the claims now presented adequately protect the invention.

None of the references shows a disc sound record  
having on its periphery indicia for identifying the record,  
as set forth in all of the claims; nor do any of the ref-  
erences show indicia for identifying the record arranged  
recurrently on the periphery of any kind of record in the  
manner specified in claims 2, 3 and 4. Claims 3 and 4  
also specify that the indicia are depressed, and claim 4  
specifies that the indicia are colored to make the same  
readily legible. The device specified in the claims is  
accordingly clearly novel. With this device it is possible  
to arrange the records much closer to each other than has  
heretofore been the case, while permitting the ready selec-

tion of any particular record desired. In view of the novelty and utility of the invention, it is thought that the claims should be allowed.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Dyer

His Attorney

Orange, New Jersey

July 19, 1916

FB-JS

Div. 22 Room 379

2-200

Paper No. 9

Address only  
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Washington, D. C.,"  
and not my official by name.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

July 23, 1915.

E-Su

Frank L. Dyer,

Orange,

New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Disc Sound Records, filed July 18, 1912,

Serial No. 710,150.



Thomas Ewing  
Commissioner of Patents.

U. S. - 2021

In response to amendment of July 20, 1915.

All the claims are finally rejected on the references and  
for the reasons of record.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

DISC SOUND RECORDS

Filed July 18, 1912

Serial No. 710,150

Room No. 379.

HONORABLE COMMISSIONER OF PATENTS,

S I R :

I hereby appeal to the Examiners-in-Chief from the decision of the Principal Examiner in the matter of my application for Letters Patent for an improvement in DISC SOUND RECORDS, filed July 18, 1912, Serial No. 710,150, which, on the 23rd day of July, 1915, was rejected the second time. The following are the points of the decision on which the appeal is taken:-

The Examiner erred in rejecting the claims and each of them.

The Examiner erred in holding the claims and each of them to be without patentable novelty.

The Examiner erred in not allowing the claims and each of them.

An oral hearing is requested.

Signed at West Orange, in the County of Essex and State of New Jersey, this 5 day of July 1916.

*Thomas A. Edison*  
By *Byron Holden*  
*Assoc. Attorney*

THOMAS A. EDISON

By *Frank C. Byer*  
His Attorney

876

In the United States Patent Office.

In re application No. 710,150, )

Thomas A. Edison, )

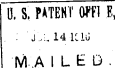
Filed July 18, 1918, )

Disc Sound Records. )

Before the Hon. Board of  
Examiners-in-Chief.

On Appeal.

-----  
Examiner's Answer.  
-----



This is an appeal from the action of the examiner in finally rejecting all of the claims in this application, which are:

1. As a new article of manufacture, a disc sound record having on the periphery thereof indicia for identifying the record, substantially as described.
2. As a new article of manufacture, a disc sound record having recurrently at intervals on the periphery thereof indicia for identifying the record, substantially as described.
3. As a new article of manufacture, a disc sound record having indicia for identifying the record depressed recurrently at intervals in the periphery of the record, substantially as described.
4. As a new article of manufacture, a disc sound record having indicia for identifying the record depressed recurrently at intervals in the periphery of the record, the indicia being colored to make the same readily legible, substantially as described.

The references relied on are:

Petit, 556,327.  
" 729,715, and  
Wurth, 775,617.

The claims cover, briefly, merely the placing of the numerals of the number of the record upon the peripheral edge of the record recurrently, so as to facilitate its identification, and also the coloring of the numbers to make them more readily distinguishable.

It is not believed that invention is required to

select the periphery of a disc record, instead of any other portion, for the placing of the indicia to identify the record. For example, when one addresses a parcel post package, he places the address in any and such positions as to be most convenient in handling. It would seem to the examiner to be absurd to say that invention would be required to place it on the end, instead of the face of the package, if such a place were more desirable or more readily seen. In indexing articles, it is common to put the identification mark where most readily seen. It would seem to be obvious to any one to place identification marks on any article in any position where most convenient. If a housewife were labeling her jars of newly preserved fruit, preparatory to being placed on their shelves, would it not seem to be a very obvious expedient to place the label where it would be most conspicuous when the jars were in place on the shelves, or in as many places as she thought would be of use in identification? The references show the idea of placing such identification on the ends of the records so that it would be visible when the records are in their container. Would it not be obvious to label a disc record so that the label or identification would be most readily seen when in its particular holder or container? It is thought that it would. *Come off*

It is a common expedient in book making, for example, to place the title on the bound edge because this is most readily seen when in a book case. If the books were to be placed in a case where the ends were visible, instead of the bound edge, would invention be required to place the title, etc., there? It is believed not. It is common practice to print any information on anything in a color different from the background, or surface printed upon. This is so widely known that it would seem that illustration was unnecessary. This expedient has been *Not printed*

followed in this art in labeling records for several years, as, for example, on cylinder records manufactured by applicant's company. To do this when printing on any portion of the record would not appear to require invention.

It is therefore respectfully submitted that the adoption of such obvious and well known expedients does not require invention, and that the claims were properly finally rejected.

Respectfully submitted,

July 14, 1916.

Examiner, Div. 25.



If it was so obvious why

didn't the Victor, Columbus &

others discard their present  
methods & adopt this,

What if their records are not  
placed ~~except~~ in proper

envelopes or are not put in  
proper marked receptacles

the utmost confusion results

Whereas by using a thicker  
records & put the numbers

on the edge of the record itself  
it always identifies itself

without confusion. This idea has  
been a great success

870

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

July 20, 1916.

Sir:

The case of Thomas A. Edison

Serial ~~FILED~~ No. 710,150, will be heard by the {Commissioner  
Examiners-in-Chief  
on the 27th day of September, 1916.

The hearings will commence at {~~two~~ one} o'clock, and as soon as  
the argument in one case is concluded the succeeding case will  
be taken up.

If any party, or his attorney, shall not appear when the  
case is called, his right to an oral hearing will be regarded  
as waived.

The time allowed for arguments is as follows:

Ex parte cases, thirty minutes;  
Motions, thirty minutes, each side;  
Interference appeals, final hearing, one hour each side.

By special leave, obtained before the argument is commenced,  
the time may be extended.

The appellant shall have the right to open and conclude in  
interference cases, and in such case a full and fair opening  
must be made.

Briefs in interference appeals must be filed in accordance  
with the provisions of Rule 147.

Respectfully,

*Thomas Ewing*

Commissioner of Patents.

To \_\_\_\_\_

To Messrs. Dyer & Holden, Attys.

Edison Office Building,

Orange, N. J.

September 21, 1926

Hon. Commissioner of Patents,  
Washington, D. C.

B i r :      Application Serial No. 710,150, filed July 18, 1912  
                 by Thomas A. Edison, entitled Disc Sound Records

I enclose herewith brief for appellant in connection with an appeal to the Honorable Board of Examiners-in-Chief in this application, which appeal has been set down for hearing on September 27, 1916. It is thought that the patentability of the invention will be understood from the brief, and appellant's attorney accordingly does not expect to be present to argue the case orally. It is respectfully requested that this case be considered on brief.

Very respectfully,

Attorney for Appellant

Enc.

Associate Attorneys

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison	)	
DISC SOUND RECORDS	)	BEFORE THE HONORABLE BOARD
Filed July 18, 1912	)	OF EXAMINERS-IN-CHIEF
Serial No. 710,150	)	

BRIEF FOR APPELLANT

In order to understand appellant's contribution to the phonograph art by the invention here in issue, it is advisable to consider the problem which appellant has solved. The invention in issue relates to improved means for identifying disc shaped sound records and for facilitating their selection when a number of the same are arranged in a filing cabinet or the like. Before appellant's invention, it was customary to identify such records when filed in the cabinet by markers or indexes placed upon the cabinet itself, as shown, for example, at b in United States patent No. 1,014,172 of record, or by placing the records between partition sheets bearing tabs to identify the records. Both of these means were objectionable in that if a record were put in the wrong place it was very difficult to locate the same. By placing the identifying indicia upon peripheries of the records themselves, as done by appellant, the records can be readily arranged close to each other and selected by merely running the eye along the edges of the records, there being no difficulty of locating a record because the same is put in the wrong place.

It is submitted that this invention was not an obvious expedient. As the honorable members of this Board are no doubt aware, no disc phonograph records upon the market prior to those put out by Thomas A. Edison, Incorporated, which corporation puts out records containing appellant's inventions, have been provided with legible identifying indicia upon the edges thereof. The Examiner has relied upon a number of patents relating to cylindrical records, but it is submitted that these offer no suggestion of the solution of the problem which appellant had in mind. This problem, as already stated, was the filing and identifying of flat disc records. It is thought that the storing of barrels of molasses in a warehouse might as well be compared with the filing of sheets of music as to compare the filing and identifying of cylindrical records with the filing and identifying of flat disc records. One of the features of appellant's invention which, it is thought, clearly points out the difference between the marking and identifying of cylindrical records and disc records is that the identifying indicia are placed recurrently at intervals on the periphery of the disc record. With cylindrical records, one identifying mark or index is sufficient; but to make it possible to readily see the indicia and to select a desired disc record when a number of them are superposed or placed closely adjacent to each other, appellant found that it was necessary to repeat the indicia recurrently.

Another feature of the invention which is not shown in any of the references is the coloring of the indicia to make the same readily legible. The Examiner refers in connection with this feature, to the practice of printing information in a color different from the background. It is pointed out that the coloring of the indicia in appellant's invention is not mere printing. The colored indicia are described as being "depressed" in the periphery of the record and are not directly upon any flat surface such as ordinary printing paper.

Appellant's invention as set forth in each of the claims clearly new; and by means of it, it is possible to select any desired record from a number of records arranged closely adjacent to each other in a cabinet by merely running the eye along the records, there being no difficulty in finding a record because it may not have been put in the right place. In the filing art, to which this invention properly belongs, patents have been frequently granted on devices of the same class as this invention. Various attempts have been made to solve the problem of filing disc records, such, for example, as that shown in U. S. patent No 1,014,172 already referred to; but the resulting devices, as herein before stated have been subject to serious objections. The invention of appellant is new and meritorious, and the Honorable Board of Examiners are accordingly respectfully requested to adjudge the claims in issue patentable in their decision on this appeal.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Dyer

His Attorney

Dyer & Holden  
Attorneys

Orange, N. J.  
September 24, 1916.

2-292

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON



Sir:

Inclosed find copy of decision this day rendered by the  
Examiners in Chief in the ex parte case of \_\_\_\_\_  
interference

Thomas A. Edison, Serial No. 710,150

By direction of the Commissioner:

Very respectfully,

*W. F. Woolard,*  
Chief Clerk.

Messrs. Dyer & Holden, Attys.,

Edison Office Bldg.,

Orange, N. J.

E.L.L.

Hearing.  
Sept. 27, 1916.

Appeal No. 72.

U. S. PATENT OFFICE.

Jan. 13, 1917.

Before the Examiners-in-Chief, on Appeal.

Application of Thomas A. Edison for a patent for an improvement in Disc Sound Records, filed July 18, 1912, Serial No. 710,150.

Mr. Frank E. Dyer, and Messrs. Dyer & Holden, attorneys for appellant.

This is an appeal from the action of the primary examiner finally rejecting the following claims:

1. As a new article of manufacture, a disc sound record having on the periphery thereof indicia for identifying the record, substantially as described.
2. As a new article of manufacture, a disc sound record having recurrently at intervals on the periphery thereof indicia for identifying the record, substantially as described.
3. As a new article of manufacture, a disc sound record having indicia for identifying the record depressed recurrently at intervals in the periphery of the record, substantially as described.
4. As a new article of manufacture, a disc sound record having indicia for identifying the record depressed recurrently at intervals in the periphery of the record, the indicia being colored to make the same readily legible, substantially as described.

The references cited are:

Petit,	666,937.	Jan. 29, 1901.
Petit,	739,713.	Sept. 22, 1903.
Wurth,	772,617.	Nov. 1, 1904.



Claim 1 is broadly for a disc sound record having indicia placed upon its peripheral edge for purpose of identification. Claims 2 and 3 further provide for the repetition of the indicia at intervals, and claim 4 calls in addition for the coloring of the indicia to make the same readily legible.

The examiner's answer so satisfactorily states our own views of this case that we feel it unnecessary to add material thereto. Certainly there can be no invention in placing identifying indicia on any articles in order that any particular one thereof may be readily located. Such indicia would naturally be placed where it could be most readily seen; and if the articles are such that they may be turned so as to present different portions toward the eye, it would be natural and without invention to duplicate the indicia in order that some set of the same may be seen irrespective of the position to which the article may have been turned. Furthermore, nothing is more common or more obvious than the printing of characters in colors when it is desired to have the same stand out conspicuously.

The decision of the examiner is affirmed as to all the claims.

S. E. Houts,

Frank C. Skinner,

Fairfax Bayard,

**Examiners-in-Chief.**

June 12 1912

Rec'd  
June 14 1912  
#13

Legal Dept —

See the new drawer  
for holding disc records  
The Edges of all show  
on the Edges are the  
numbers of the record

Come up & I will explain

the Advantages —

Tolson

RL  
6/11/12

Sam G. Walker

June 28, 1916

Mr. H. E. Miller:-

Kindly let me have a check for \$10.00 drawn to the order of the Commissioner of Patents, to cover fee in connection with an appeal to the Board of Examiners-in-Chief in the matter of Mr. Edison's application Serial No. 710,150 entitled Disc Sound Records.

Charge to Disc Record Division.

Mr. Holden

September 12, 1916

Mr. Edison:-

FOLIO 870 - DISC SOUND RECORDS

This application relates to your invention for identifying disc sound records by placing numbers on the edges thereof. The claims were finally rejected, and acting under your instructions, we have filed an appeal to the Board of Examiners-in-Chief. We consider that it will be difficult to secure the allowance of the claims, and it will be necessary to present the case as forcibly and in as effective a manner as possible before the Board of Examiners-in-Chief. For these reasons, do you not think it will be best to have the case argued by an outside attorney of high standing? If you wish the case handled in this way, I presume you will wish to have the matter entrusted to Mr. Bull, with whose ability in patent matters you are very familiar. Mr. Bull's charges would be about \$500.

Alfred Holden  
A.H.

FB-JS

Yes, but Bull better get all the points so he  
can make a good argument -  
There are a good many points about it

5

September 15, 1916

Mr. Edison:-

FOLIO 870 - DISC SOUND RECORDS

I have discussed this case with Mr. Bull with a view to having him argue the appeal before the Examiners-in-Chief. Mr. Bull does not care to take the case inasmuch as he cannot see any patentability in it. Is there any other outside attorney, Mr. Dyer, for example, you would like to have argue this case?

FE-JS

*H. Bachmann*

*If Mr Bull can throw down a fee because  
he dont believe it patentable, its pretty evident  
that the case has no merit Drop it,*

*Edison*

**Patent Series**  
**Patent Application Files**

Folio # 871      Phonograph Recorders

Serial #:            710151

Primary Applicant: Edison, Thomas A

Date Executed:    7/15/1912

[PHOTOCOPY]

Serial No. 770,191

Applicant

Address

James F. Edwards

Title Phonograph Records

Filed July 18-1912

Examiner's Room No. 379

Assignee

Ass't. Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

Abandon

Office Letter Sep. 17-1912 20

Amendment July 24/12 21

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Applicant's Power of Attorney to

Dyer & Holden Aug. 10/17 20

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Final Decree March 27-1918 30

Dyer & Holden, Attorneys  
FRANK L. DYER, Counsel,  
Orange, New Jersey.

VAULT

7871

# Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,  
a citizen of the United States, residing and having a Post Office address at  
West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

PHONOGRAPH RECORDERS

set forth in the annexed specification; and he hereby appoints Frank L. Dyer  
(Registration No. 560), of Orange, New Jersey, his attorney, with full  
power of substitution and revocation, to prosecute this application, to make  
alterations and amendments therein, to receive the patent, and to transact all  
business in the Patent Office connected therewith.

Thomas A. Edison



# S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in PHONOGRAPH RECORDERS of which the following is a description:

My invention relates to phonograph recorders. Heretofore it has been the common practice in making recorders for recording sound waves on phonograph records to secure the diaphragm forming a part of the recorder in place by an elastic or deformable connection comprising, for example, a rubber ring against which the peripheral portion of the diaphragm bears. With this construction, the deformable connections forms a part of the vibrating system set into motion by the sound waves and permits the vibration and flexing of the peripheral portion as well as the body of the diaphragm; so that the vibrations of the latter are of such large amplitude when the sounds to be recorded are loud that the recording knife is liable to entirely leave the record surface when the records are made by the up and down or hill and dale method. This movement of the recorder out of contact with the surface of the record blank results in an imperfect sound record; and the imperfections will be manifested in reproduction by the leaping of the reproducer mechanism from the record surface and the production of sharp unpleasant sounds, commonly referred to in the phonographic art as "blasting".

Furthermore, when the diaphragm is secured in place by an elastic and deformable connection, as heretofore, it is impossible to use very thin sensitive diaphragms, as the downward movement of the diaphragm causes a similar movement of the deformable connection; and, the recorder accordingly digs too deeply into the record material for accurate and satisfactory results. The principal object of my invention is to obviate the above objections and secure a sensitive and efficient recorder.

I have found that the above object may be obtained by securing the peripheral portion of the diaphragm rigidly and immovably in position so that the only movement which the diaphragm can make is within or inside of the rigidly secured area at the periphery of the diaphragm, the vibration of the latter being entirely due to the natural elasticity of the material thereof. With this construction, the power necessary to vibrate the diaphragm increases very rapidly with the amplitude of the vibrations and the amplitude is limited or confined by the elasticity of the diaphragm within a narrow range, which range is such that the recorder knife does not leave the record. While the abnormally large vibrations produced with the common construction in which the diaphragm is secured in place by a deformable connection, are eliminated by my improved construction, the sensitiveness of the diaphragm to vibrations of small and normal amplitude may be maintained unimpaired by the use of an exceedingly thin elastic diaphragm, such as those heretofore more fully referred to. As hereinbefore explained, it has not been practical to employ such a diaphragm with the recorders now in common use. Thin diaphragms such as contemplated by this invention, not only give great sensitiveness to vibrations of small amplitude, but by a selection of

proper material and a proper thickness thereof, such diaphragms are capable of recording a great range of volume, so that when rigidly secured at their peripheries to eliminate the danger of the recording knife leaving the record or cutting too deeply therein, they do not occasion an objectionable loss either of volume or of the weaker sound waves. Other objects of my invention will appear more fully in the following specification and appended claims:

In order that my invention may be more fully understood, attention is hereby directed to the accompanying drawings forming a part of this specification and in which -

Fig. 1 is a central vertical sectional view of a sound recorder embodying my invention; and

Fig. 2 is a bottom plan view thereof.

In both of the views like parts are designated by the same reference numerals. Referring to the drawings, the sound box 1 is provided with the usual passage 2 adapted to be connected with the outlet of the recording horn, this passage communicating with a recess 3 formed in the body of the sound box and enclosed on the sides by an annular flange 4 depending from the sound box body. The diaphragm 5 rests in engagement with the lower surface of the flange 4 and is held in engagement with the latter by a ring 6 secured in position against the under side of the diaphragm by suitable fastening means, such as screws 7 passing through the said ring and diaphragm and threaded into the flange 4. The sound box and the ring 6 are preferably made of metal, but the same may be made of any suitable rigid material; so that the peripheral portion of the diaphragm will be rigidly and immovably

clamped in position with respect to the sound box. In order that the diaphragm may be held with absolute secureness between the ring 5 and the flange 4, the surfaces of the said ring and flange in engagement with the diaphragm are preferably lapped or finished in any other suitable way.

The diaphragm may be made of any material of suitable elasticity, the thickness of the diaphragm depending on the elasticity of the material used. Materials I have found suitable for this purpose are thin sheets of aceto-cellulose, celluloid, paper, tracing cloth, and metals such as copper, nickel and aluminum. In general, diaphragms of the less stiff elastic materials such as celluloid may be made thicker than those of the stiffer elastic materials, such as mica and the metals. I have found that satisfactory results are obtained with a diaphragm two inches in diameter, which is clamped for a distance of one-quarter of an inch inwardly from the periphery between the ring 5 and the flange 4; so that a central portion of the diaphragm one and one-half inches in diameter is left free to vibrate. With a mica diaphragm of this diameter, best results are obtained when the thickness of the diaphragm is less than .001 of an inch. If celluloid be used in place of mica, the thickness may be increased to .006 of an inch without a sensible alteration of the elasticity and sensitiveness of the diaphragm. As it is difficult, for mechanical reasons, to use diaphragms of mica and metals less than .001 of an inch thick, it will be seen that the desired sensitiveness can best be obtained by using diaphragms of materials, such as celluloid or aceto-cellulose, which may be of greater thickness. When the diaphragm is made

of paper or tracing cloth, the proper tension is best obtained therein by dampening the diaphragm just before securing it in place; so that upon drying, the diaphragm shrinks and becomes elastically stretched in position. A diaphragm of the type described is very light and rapid in action so that the rapid sound vibrations are not distorted by the inertia of the diaphragm; and furthermore the power necessary to move or vibrate the diaphragm increases very rapidly with the amplitude; so that there is no tendency for the recording stylus or knife to leave the recording material or to dig too deeply therein.

In order to ensure the vibration of the diaphragm over substantially the whole area within the flange 4 and ring 5, I employ a rigid centre piece 8 secured to the diaphragm over a substantial portion of the area thereof. For a diaphragm having a diameter of about one and one half inches within the clamped area, as described above, this centre piece may be made of a diameter of about one half of an inch. In order to secure lightness for this centre piece so as not to interfere with the sensitiveness of the diaphragm, I preferably form the same of an outer shell 9 of aluminum or other light metal and an inner filling 10 of light wax-like material such as paraffin, the paraffin serving not only to render the centre piece rigid, but also to cement the shell 9 to the diaphragm. The centre piece 8 is preferably in the shape of a segment of a sphere, the outer surface being curved and the surface in contact with the diaphragm being flat.

The recording stylus 11 is carried by one end of an arm or lever 12, the other end <sup>13</sup> of the lever being

secured, as by shellac, to the diaphragm adjacent to and within the ring 4. A connection 14 interposed between, and preferably secured to, the centre piece 8 and the arm 12 permits the vibrations of the ~~stylus~~ <sup>diaphragm 7/24/13</sup> 11 to be imparted to the ~~diaphragm~~ <sup>stylus 7/24/13</sup>. If desired, a lever or spring arm 15 carrying a rounded tracking member 16 adapted to engage the record surface may be used, a screw 17 being threaded into the sound box body with its lower end 18 bearing upon the upper side of the free end of the lever or arm 15 to adjust the vertical position of the tracking member 16 to regulate the depth of cut permissible for the recording stylus 11.

While I have described the preferred form of my invention, numerous modifications may be made in the specific structure herein disclosed without departing from the spirit of my invention.

What I claim as now and desire to protect by Letters Patent of the United States is as follows:

- Patented Aug. 31-1914*
1. In a recorder, the combination of a sound box and a diaphragm of elastic material having a peripheral portion rigidly and immovably secured to said sound box, substantially as described.
  2. In a recorder, the combination of a sound box and a diaphragm of elastic material secured thereto, the said sound box being provided with rigid clamping means engaging opposite faces of the diaphragm at the periphery thereof to clamp the same in position, substantially as described.
  3. In a recorder, the combination of a sound box having a rigid annular flange, a diaphragm of elastic

*Amended 9/3/14*  
material, and a ring of rigid material for clamping said diaphragm to said flange, said diaphragm being in direct engagement with said flange and ring, substantially as described.

4. In a recorder, the combination of a sound box and a thin diaphragm of elastic material having a peripheral portion rigidly and immovably secured to said sound box, substantially as described.

5. In a recorder, the combination of a sound box, a diaphragm of elastic material having a peripheral portion rigidly and immovably secured to said sound box, and means for stiffening the central portion of said diaphragm, substantially as described.

6. In a recorder, the combination of a sound box, a diaphragm of elastic material having a peripheral portion rigidly and immovably secured to said sound box, and a rigid centre piece secured to said diaphragm over a substantial portion of the area thereof, substantially as described.

7. In a recorder, the combination of a sound box, a thin diaphragm of elastic material having a peripheral portion rigidly and immovably secured to said sound box, and means for stiffening the central portion of said diaphragm, substantially as described.

8. In a recorder, the combination of a sound box and a thin diaphragm having a peripheral portion rigidly and immovably secured to said sound box, said diaphragm being formed of a material derived from cellulose, substantially as described.

9. In a recorder, the combination of a sound box and a thin celluloid diaphragm having a peripheral

portion rigidly and immovably secured to said sound box,  
substantially as described.

~~10. In a recorder, the combination of a sound box  
and a thin mica diaphragm having a peripheral portion  
rigidly and immovably secured to said sound box, substantially  
as described.~~

~~Insert A. - Claim 10 7/24/13~~

~~Insert B. Claims 1-10 2/31/14~~

~~Insert C. Claims 1-5 inc. 4/17/15~~

~~Insert D. Claim 1 rewritten 9/5/16~~

~~Insert D' - Claim 3 9/5/16~~



This specification signed and witnessed this 15<sup>th</sup> day of July 1912

Thomas A. Edison

Witnesseth:

1. Fredrich Bachmann

2. Anna P. Kuhn

## Oath.

State of New Jersey } ss.,  
County of Essex }

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of 460 West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in PHONOGRAPH RECORDERS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Sworn to and subscribed before me this 15<sup>th</sup> day of July 1912

[Seal]

Thomas A. Edison  
Anna P. Kuhn  
Notary Public.

922 871 / 11 / 5

711 157

DIV. 23.

Fig. 1

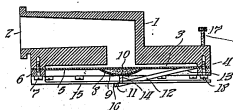
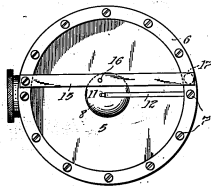


Fig. 2



**Witnesses:**  
*James D. Davis*  
*Frederick Packman*

**Inventor:**  
*Thomas A. Edison*  
*by Frank L. Rice*  
*his Atty.*

See U. S. Pat.  
 1,026,404

002

DIV. 23... Room 379

Address only  
"The Commissioner of Patents,  
Washington, D. C."  
J. H. D. - Sub.

2-200

Paper ~~Letter~~

All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

Sept. 17, 1912.

Thomas A. Edison,  
Care Frank L. Dyer,  
Orange, N.J.

U. S. PATENT OFFICE,  
SEP 17 1912  
MAILED.

Please find below a communication from the EXAMINER in charge of your application.

for Phonograph Records, filed July 18, 1912, serial number  
710,151.

16-5851

*E. B. Moore*

Commissioner of Patents.

Page 6, line 4, "stylus" should be "diaphragm". Line 5,  
"diaphragm" should be "stylus".

Claims 8 and 9 are specific to a diaphragm composed of  
cellulose material.

Claim 10 is specific to a diaphragm made of mica.

Division is required according to the provisions of Rules 41  
and 42 and the ruling in ex parte Eagle, C.D., 1870, 136.

In amending this case, attention is directed to the  
following references:

Garcia, Feb. 10, 1903, #720,127;

Edison, July 1, 1902, #703,774;

White, April 15, 1890, #425,840;

Edison, Dec. 4, 1888, #394,105, all in (181-10);

Kerr, October 20, 1903, #901,713, (181-11);

Oaksford, Eng. patent, Sept. 28, 1903, #20,766, (181-10).

*See 2, 746.*  
*out of print.*  
*see 1903-1904 Patent Office*

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
PHONOGRAPH RECORDERS, ) Room No. 379.  
Filed July 18, 1912, )  
Serial No. 710,151. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of  
September 17, 1912, please amend the above entitled case  
as follows:

In line 4. page 6, change "stylus" to  
- diaphragm - ; and in line 5, same page, change "diaphragm"  
to - stylus - .

Cancel claim 10 and insert the following as  
new claim 10. *Cancelled 8/21/14*

*a* 10. In a recorder, the combination of a sound box  
and a diaphragm of elastic material having a peripheral  
portion rigidly and immovably secured to said sound box,  
the thickness of said diaphragm being no greater than  
.006 of an inch, substantially as described.

REMARKS

The Examiner's requirement for division has  
been complied with and action on the merits of the claims  
now in the application is respectfully requested. The  
right is reserved to file a divisional application on the  
subject matter of the canceled claims.

New claim 10 presented herewith is drawn to the  
same invention as claims 1 to 9 inclusive and is thought

to be patentable and necessary to fully protect the applicant in his invention.

Respectfully submitted,

THOMAS A. EDISON,

By Frederic R. Dyer  
his attorney.

Orange, New Jersey,

July 24, 1913.

FB-KGK

Div. 23 Room 379

Address only  
"The Commissioner of Patents,  
Washington, D. C."  
J. H. D. - Sut.

2-380

Paper No. 1, 1, 1

All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON Sept. 19, 1913.

Frank L. Dyer,

Orange, New Jersey

U. S. PATENT OFFICE,  
SEP 19 1913  
MAILED.

Please find below a communication from the EXAMINER in charge of the application of  
Thomas A. Edison, serial number 710,151, filed July 18, 1912, for  
Phonograph Records.

2-3-323

*J. H. D. - Sut.*  
Commissioner of Patents.

This action is responsive to the amendment filed July  
25, 1913.

Claims 1, 2, 3 and 4 are rejected on Garcia of record,  
Brown, Aug. 6, 1889, 408,349, (181-15), Edison, June 17, 1890, 430,279,  
181-10, Edison, 703,774, of record, Berliner, Feb. 19, 1895, 534,543,  
183-3, or Berliner, July 28, 1896, 554,586, (181-3).

Claims 5, 6 and 7 are rejected on any of the references cited.  
Garcia, Brown and Edison, show the stiffening means at the center  
of the diaphragm or means which would have that function. Additionally,  
no invention is found in employing the mounting of the diaphragm  
as shown in the cited references with diaphragm stiffening means  
as in Macdonald, October 8, 1901, 758,988, Macdonald, Dec. 17, 1907,  
873,753, Wieder, Sept. 9, 1902, 708,849, or Norcross, June 11, 1901,  
676,270, all in (181-10).

Claims 8 and 9 are rejected on the references of rejection  
of claim 1. No invention is found in employing celluloid in the  
cited structures, such being a very common diaphragm material as in  
Edison, 394,105, of record.

Claim 10 is rejected on the references of rejection of claim 1.  
No invention is found in making the cited diaphragms of the  
particular thickness, such being a matter of selection and difference.

#710,151-----2.

in degree only, especially in view of the disclosure of Edison,  
Dec. 21, 1909, 943,664, (181-10), or Coombs, French patent, Feb. 3,  
1908, 382,260, (181-10).

Attention is also directed to Figure 4 of Bell, et al.,  
May 4, 1886, 341,214, (181-3).

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPH RECORDERS

Room No. 379

Filed July 18, 1912

Serial No. 710,151

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action  
of September 19, 1913, please amend the above entitled case  
as follows:-

Cancel the claims and insert the following new  
claims in place thereof: -

*Amended - Insert C. - 8/17/15*  
1. The combination of a sound box, a diaphragm  
of elastic material having a peripheral portion rigidly  
secured to said sound box, and a <sup>rigid transverse</sup> center piece secured to  
the diaphragm over a considerable portion of the area there-  
of to insure vibration of the diaphragm over substantially  
the whole of the unsecured portion thereof, <sup>as before</sup> said diaphragm  
being of such elasticity and thickness as to be normally  
incapable of vibrating over the whole of said portion with-  
out said center piece, substantially as described.

*length 10.1 +*  
2. The combination of a sound box, a diaphragm  
of elastic material not greater than .006 of an inch in  
thickness and having a peripheral portion rigidly secured  
to said sound box, and a center piece secured to the dia-  
phragm over a considerable portion of the area thereof to



Revised - Invent C - 8/17/15

insure vibration of the diaphragm over substantially the whole of the unsecured portion thereof, substantially as described.

3. The combination of a sound box, a collinoid diaphragm not greater than .006 of an inch in thickness and having a peripheral portion rigidly secured to said sound box, and a center piece secured to the diaphragm over a considerable portion of the area thereof to insure vibration of the diaphragm over substantially the whole of the unsecured portion thereof, substantially as described.

4. The combination of a sound box, a diaphragm of elastic material having a peripheral portion secured to said sound box, a center piece secured to the diaphragm over a considerable portion of the area thereof to insure vibration of the diaphragm over substantially the whole of the unsecured portion thereof, said diaphragm being of such elasticity and thickness as to be normally incapable of vibrating over the whole of said portion without said center piece, a stylus arm connected to said center piece, and a stylus carried by said arm, substantially as described.

5. The combination of a sound box, a diaphragm of elastic material having a peripheral portion rigidly secured to said sound box, and a center piece having a diameter not less than one-quarter the diameter of the unsecured portion of the diaphragm to insure vibration of the diaphragm over substantially the whole of the unsecured portion thereof, said diaphragm being of such elasticity

and thickness as to be normally incapable of vibrating over the whole of said portion without said center piece, substantially as described.

Revised 9/5/11  
6. The combination of a sound box, a diaphragm of elastic material not greater than .006 of an inch in thickness, having a peripheral portion rigidly secured to said sound box, and a center piece having a diameter <sup>secured to said diaphragm</sup> ~~not less than one-quarter~~ <sup>approximately one-third</sup> of the diameter of the unsecured portion of the diaphragm to insure vibration of the diaphragm over substantially the whole of the unsecured portion thereof, <sup>said center piece</sup> substantially as described.

7. A diaphragm having secured thereto a center piece formed of a shell and a filling therefor, substantially as described.

8. A diaphragm having secured thereto a center piece formed of a metallic shell and a filling therefor, substantially as described.

9. A diaphragm having secured thereto a center piece formed of a shell and a filling therefor, said filling serving to secure the center piece to the diaphragm, substantially as described.

10. A diaphragm having secured thereto a center piece formed of a metallic shell and a filling therefor, said filling serving to secure the center piece to the diaphragm, substantially as described. -

#### REMARKS

The references cited by the Examiner have been carefully considered and the claims rewritten to more clearly distinguish applicant's invention from the prior art.

Claims 1 to 6 inclusive describe a new combination of elements which produces the improved results set forth in applicant's specification. These claims specify a diaphragm rigidly secured to the sound box, and a center piece insuring vibration of the diaphragm over substantially the whole of the unsecured portion thereof, the diaphragm being of such elasticity and thickness as to be normally incapable of vibrating over the whole of said portion without said center piece. None of the references discloses this combination, nor do any of them suggest the same.

Claims 7 to 10 inclusive specify a diaphragm having a center piece of a construction not disclosed in the references.

For the above reasons, reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank L. Dixon

His Attorney

Orange, New Jersey,  
~~September~~ <sup>August</sup> 31, 1914

FB-JS

Div. 25. Room .....  
Address only  
"The Commissioner of Patents,  
Washington, D. C.,  
and not any official by name."

2-200

Paper No. 6  
All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

LCE-Su

WASHINGTON

Sept. 18, 1914.

Frank L. Dyck,

Orange,

N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Phonograph Records, filed July 18, 1912.

Serial No. 710,151.

*Thomas Edison*  
Commissioner of Patents.

2-201

In response to amendment of Sept. 1, 1914.

Claim 1 is objectionable as indefinite in the subject-matter beginning "said", line 6, to the end of the claim.

Claims 4 and 5 are also objectionable as indefinite for the same reason.

Claims 1, 4 and 5 are rejected as drawn to new matter in the subject matter above noted. No foundation is found in the specification as filed for the statement that the diaphragm material is of such elasticity and thickness as here specified.

Claims 1 and 5 are also rejected on Edison, 703,774, of record, or Cahit, Eng. patent, 14,179, July 11, 1901, (181-10), 1 sheet.

Claims 2, 3 and 6 are rejected on Edison or Cahit. No invention is found in using celluloid for the diaphragm material, especially in view of the well known use in this art, as in references of record. The selection of the particular thickness is not believed to involve invention, but is thought to be a matter of degree only.

Claim 4 is rejected on Morcross, of record, Edison or Cahit, of record, or Oakford, of record, in view of the type of recorder with the pivoted stylus arm as in Edison, 430,278, of record.

Claims 5 and 6 are also rejected as drawn to new matter in the limitation "not less than one-quarter of the diameter of the unse-

oured portion of the diaphragm". There is no disclosure in the application as filed of any relation existing between one-quarter of the diameter of the diaphragm and the diameter of the center piece.

Claims 7, 8<sup>9</sup> and 10 are allowed, as at present advised.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPH RECORDERS

Filed July 18, 1912

Serial No. 710,161

Room No. 379.

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
September 18, 1914, please amend the above entitled case  
as follows:-

Rewrite claims 1 to 5 inclusive as follows:-

*amended*  
*Re-written - Inventor's - 9/14/17*  
1. The combination of a sound box, a diaphragm  
of elastic material having a peripheral portion rigidly  
secured to said sound box, a rigid member secured to the  
central portion of the diaphragm <sup>comprising a shell and a stylus</sup> over a considerable portion  
of the area of the diaphragm to insure vibration of the lat-  
ter over substantially the whole of the unsecured portion  
thereof, a stylus arm connected to said member and extending  
towards the periphery of the diaphragm, and a stylus carried  
by said arm, substantially as described.

*Cancelled 9/14/17*  
2. The combination of a sound box, a diaphragm  
of elastic material not greater than .006 of an inch in  
thickness and having a peripheral portion rigidly se-  
cured to said sound box, a rigid member secured to the  
central portion of the diaphragm over a considerable portion

of the area of the diaphragm to insure vibration of the latter over substantially the whole of the unsecured portion thereof, a stylus arm connected to said member and extending towards the periphery of the diaphragm, and a stylus carried by said arm, substantially as described.

*Cancelled 9/5/46*  
3. The combination of a sound box, a celluloid diaphragm not greater than .006 of an inch in thickness and having a peripheral portion rigidly secured to said sound box, a rigid member secured to the central portion of the diaphragm over a considerable portion of the area of the diaphragm to insure vibration of the latter over substantially the whole of the unsecured portion thereof, a stylus arm connected to said member and extending towards the periphery of the diaphragm, and a stylus carried by said arm, substantially as described.

4. The combination of a sound box, a diaphragm of elastic material having a peripheral portion rigidly secured to said sound box, a member having a diameter not greater than one-third the diameter of the unsecured portion of the diaphragm secured to the central portion of the diaphragm to insure vibration of the latter over substantially the whole of the unsecured portion thereof, a stylus arm connected to said member and extending towards the periphery of the diaphragm, and a stylus carried by said arm, substantially as described.

5. The combination of a sound box, a diaphragm of elastic material having a peripheral portion rigidly secured to said sound box, a member having a diameter not less than one-fourth the diameter of the unsecured portion of the diaphragm secured to the central portion of

the diaphragm to insure vibration of the latter over substantially the whole of the unsecured portion thereof, a stylus arm connected to said member and extending towards the periphery of the diaphragm, and a stylus carried by said arm, substantially as described. -

Claim 6, lines 4 and 5, change "not less than one-quarter" to - approximately one-third - .

#### R E M A R K S

The rejected claims are thought to have been allowable as formerly presented. These claims have been revised, however, and as now presented are thought to be clearly allowable. Neither the patent to Edison 703,774 nor the British patent to Cahit discloses a center piece connected to a stylus arm extending towards the periphery of the diaphragm. It is submitted that the thickness of the diaphragm as well as the character and size of the center piece with respect to the diaphragm are important and patentably material.

With respect to the rejection of former claims 5 and 6 as drawn to new matter, it is submitted that there is a sufficient basis for these claims in the original specification, which specifies as a particular embodiment of applicant's invention a center piece having a diameter of about one-half of an inch for a diaphragm, the unsecured portion of which measures about one and a half inches in diameter. This center piece has a diameter one-third the diameter of the unsecured portion of the diaphragm, and therefore not less than one-quarter of the diameter of the said portion of the diaphragm.



It is thought that the patents to Oaksford, Norcross and Edison 430,278 are not pertinent to this invention. The patent to Oaksford does not disclose a stylus arm extending towards the periphery of the diaphragm, nor does it disclose a rigidly secured diaphragm, the washer 1 being made of papier mache. It is thought that the patent to Edison 430,278 should not be combined with the other references to produce an invention not contemplated in any of the references. In the patent to Norcross, the boss 2 is not connected to the center of the diaphragm, and the diaphragm is evidently not rigidly secured in position nor is there a stylus arm of the type set forth in claims 1 to 5 inclusive.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Frank R. Dyck

His Attorney

Orange, N. J.

August 17, 1915

FB-JS

Div. 25 Room 379Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-200 RS

Paper No. 8All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

Sept. 14, 1915.

F. L. Dyer,Orange,N. J.

Please find below a communication from the EXAMINER in charge of the application of  
T. A. Edison, filed July 18, 1912, Ser. No. 710,151, for

## PHONOGRAPH RECORDERS

  
Commissioner of Patents.

8-3021

In response to amendment of Aug. 18, 1915.

Claims 7, 8, 9 and 10 are allowed.

Claims 1 to 6, inclusive, must be again rejected as  
specifying but a judicious selection of old features from the  
art.

It is very common in the art as in references of record,  
Cahit, Oakesford, Edison, 703,774, for example, to provide rigid  
members to cause a substantially uniform vibration of the dia-  
phragm. These are frequently of approximately one-third the  
diameter of the diaphragm, as in Bell et al., of record, to  
which may be added as illustrative of many structures.

(Eng.) Cordock, 2,155, Feb. 20, 1906, (181-10) sheet 1,  
James, 24,000, Nov. 6, 1906, (181-10) Figs 7-10,  
Dolono, 563, French Addition (181-10) 1 sheet.

Invention cannot be seen in substituting in any of the  
above structures another old type of stylus mounting as in  
Edison, 430,278, of record, or Macdonald, 873,763, of record,  
for example; on in employing such a diaphragm bracing means as  
shown in the first references in the type of recorder of the  
last two references, especially as each of these latter two  
structures employs a connection to the diaphragm that differs  
in degree only from applicant's structure in the extent of

710,151---2

diaphragm which it operates upon.

Again, celluloid is a well-known diaphragm material, as in Edison, 394,106, of record; and it has been shown old to provide diaphragms as thin or thinner than applicant specifies. The judicious selection from the prior art of old materials and dimensions to use with old stylus mechanism is thought but the skill to be expected of one conversant with the art.

Claims 4 and 5 are objectionable as indefinite, line 4, "not-----diameter".

Claim 5 is also rejected as drawn to new matter in the quoted phrase for the reasons of record.

It is to be noted that claim 6 specifies but Bell et al's sound box with the diaphragm thin as in references of record.

It is hoped applicant will consider this action final.

Examiner Div. 23.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPH RECORDERS

Room No. 379.

Filed July 18, 1912

Serial No. 710,151

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
September 14, 1915, please amend the above entitled case  
as follows:-

Rewrite claim 1 as follows: -

20 1. The combination of a sound box, a diaphragm  
of elastic material having a peripheral portion rigidly  
secured to said sound box, and a center piece secured to  
the diaphragm and comprising a shell and a filling therefor,  
substantially as described. -

Cancel claims 3, 4, 5 and 6 and insert the follow-  
ing as new claim 3: -

21 3. The combination of a sound box, a celluloid  
diaphragm not greater than .0008<sup>1/2</sup> of an inch in thickness  
having a peripheral portion rigidly secured to said sound  
box, and a center piece secured to said diaphragm to insure  
vibration of the latter over substantially the whole of the  
unsecured portion thereof, said center piece having a diam-  
eter approximately one-third of the diameter of the un-  
secured portion of the diaphragm, substantially as described. -

Renumber claims 7, 8, 9 and 10 as 4, 5, 6 and 7  
respectively.

R E M A R K S

The last Office action has been carefully considered. Although it is thought that all of the claims submitted at the time of the last amendment are patentable, all of the rejected claims except claim 2 have been canceled in order to expedite the prosecution of this case. The claims now presented are thought to fully protect the invention.

Claim 1 specifies that the center piece is formed of a shell and a filling therefor.

Claim 2 and present claim 3 are thought to be patentable. These claims are not anticipated by any single reference, and it is submitted that it would require invention to combine the constructions of the various references so as to produce the combination set forth in these claims. That the production of these combinations was not obvious is evidenced by the fact that a large amount of experimenting was done before these combinations were evolved. The combinations are new and produce very superior results, as set forth in the specification. For these reasons, it is thought that the claims in question should be allowed.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

Orange, N. J.

By

*Frank L. Dyer*

Sept. 5, 1916

His Attorney

Div. 23 Room 279

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

871  
2-280

Paper No. 10

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

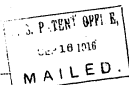
B E

WASHINGTON

Sept. 16, 1916.

Frank L. Dyer.

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Phonograph Records, filed July 18, 1912.

Serial No. 710,151.

Thomas Ewing  
Commissioner of Patents.

6-3081

In response to amendment of Sept. 6, 1916.

This case is made special under Order #2210, and the  
following action is taken with the approval of the law examiner.

Claim 2 is again rejected on the references and for the  
reasons of record.

Claim 3 is substantially the same as former claim 6, and  
it is rejected for the reasons of record. It is to be noted that  
.0006 in claim 3 should be -.0006-.

This rejection is made final.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison  
PHONOGRAPH RECORDERS  
Filed July 18, 1912  
Serial No. 710,151

Room No. 379.

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action  
of September 16, 1916, kindly amend the above entitled  
case as follows:

Cancel claims 2 and 3, and change the numerals  
of the remaining claims.

R E M A R K S

The above amendment places the application in  
condition for allowance.

Very respectfully,

THOMAS A. EDISON

By \_\_\_\_\_

His Attorneys

ADDRESS ONLY  
THE COMMISSIONER OF PATENTS,  
WASHINGTON, D. C.

2-181

Serial No.

RECEIVED BY

AR  
DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Sept. 27, 1917.



Thomas A. Edison,

Sir: Your APPLICATION for a patent for an IMPROVEMENT IN  
Phonograph Recorders,

filed July 18, 1912, has been examined and ALLOWED.  
The final fee, TWENTY DOLLARS, must be paid not later than  
SIX MONTHS from the date of this present notice of allowance.  
If the final fee be not paid within that period, the patent on  
this application will be withheld, unless renewed with an  
additional fee of \$15, under the provisions of Section 4897,  
Revised Statutes.

The office delivers patents upon the day of their date, and  
on which their term begins to run. The printing, photolitho-  
graphing, and engrossing of the several patent parts, prepara-  
tory to final signing and sealing, will require about four  
weeks, and such work will not be undertaken until after payment  
of the necessary fee.

When you send the final fee you will also send, DISTINCTLY  
AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVEN-  
TION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE  
(which is the date of this circular), DATE OF FILING, and, if  
assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an  
assignment containing a REQUEST to that effect, together with  
the FEE for recording the same, must be filed in this office on  
or before the date of payment of final fee.

After issue of the patent uncertified copies of the draw-  
ings and specifications may be purchased at the price of FIVE  
CENTS EACH. The money should accompany the order. Postage  
stamps will not be received.

Final fees will NOT be received from other than the appli-  
cant, his assignee or attorney, or a party in interest as shown  
by the records of the Patent Office.

Respectfully,

J. S. Newton

Thomas A. Edison  
Commissioner of Patents.

Dyer & Holden,

Edison Bldg.,

Orange, N. J.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.



Legal Dept

Soak—

Rec'd  
June 14/1914  
S. B.

11/1/12

The object of this invention is to improve the recorder for phonograph

Sacramento

The invention consists of causing the entire movement of the diaphragm to take place by its elasticity, without deforming its edges

Henceforth it has been the universal practice in making recorders for recording sound waves upon the phonograph to so secure the edges of the diaphragm by some elastic or deformable clamp that the latter in connection with the diaphragm forms the vibrating system,

2

~~It is~~ as this combination permits of very large amplitudes when the sounds are loud it becomes objectionable when records are made by the up + down method as the recording knife is liable to leave the record entirely -

To prevent this to a great extent & yet secure sensitivity to the weak sound waves is the object of this invention,

I secure the edges of the diaphragm rigidly so that the only movement which the diaphragm can make is beyond the rigidly clamped area of the edges. ~~It is~~ is due entirely to the natural elasticity

of the material of the diaphragm as this has narrow limits unlike that of a diaphragm yielding clamp around its edges which has wide limits of amplitude. I am enabled to check large amplitudes without lessening to any great extent the sensitiveness to small amplitudes.

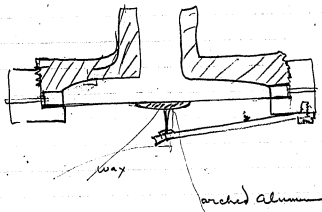
Extremely thin diaphragms can be used ~~then~~ impossible where the edges vibrate, & these very thin diaphragms give sufficient sensitiveness to small amplitudes & by a proper material & thickness a great range of volume of sound can be recorded without danger of the recording knife

leaving the record at the same time the weaker waves are not lost due to lack of sensitiveness.

*Handy for*  
I employ mica diaphragms  $1\frac{1}{2}$  diameter  $\frac{1}{8}$  of inch of the edges being simply clamped between metallic surfaces leaving  $1\frac{1}{4}$  inch of diaphragm free to vibrate. The thickness will vary from  $\frac{1}{1000}$  of inch in thickness to  $\frac{1}{2}$  of this amount & even  $\frac{1}{4}$  of this thickness is practicable. ~~The~~ The diaphragm is thus very light, ~~but~~ the resiliency is of a very rapid nature so that the rapid vibrations are not

5.

distorted by inertia +  
the rapidly increasing power to  
increase the amplitude prevents  
them from rising so far as  
to cause the secondary  
knife to leave the way

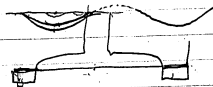
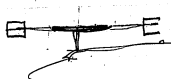
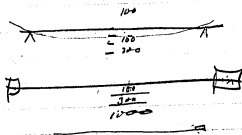


also clamped around Edges  
by many screws (see Pierson Model)

6

I will discuss claims





Aluminum center piece  
on diaphragm important.

Diaphragm should be  
 $1/1000$  in. or less in  
thickness and should  
have a ~~small~~ <sup>superficial</sup> limit of  
elasticity. Animal membrane  
and cork too stretchable.  
Now theoretically ok, but  
not yet found practically  
satisfactory. Present  
best diaphragms would  
not contract sufficiently  
to amplitude, in ~~clamped~~  
between rigid members.

See U.S. pat. 394, 106.  
703,774.  
908,625.

Rec'd from  
Mr. Edison July 11, 1912  
# B.

Thin sheets of acetate celluloid  
Metals - also paper tracing cloth  
or - The greater the internal  
elasticity the thicker the diaphragm  
can be - in case of mica & metals  
~~the~~ the best thickness is less  
than  $\frac{1}{1000}$  of inch when the  
diameters of the diaphragm is  
~~to be~~  $1\frac{1}{2}$  inches - In the  
case of celluloid the thickness  
can be increased to  $\frac{6}{1000}$ ,  
when the elasticity & sensitivity  
is about the same as  $\frac{1}{1000}$   
mica or metallic nickel.

As it is difficult to use mica  
& metals much less than  
 $\frac{1}{1000}$  thick for mechanical  
reasons - it will be seen

2

that increased sensitiveness  
can be obtained by using  
Celluloid, or acetate celluloid -  
~~but~~

To obtain the proper stretch  
of materials like tracing cloth  
paper ~~or~~ it is best to dampen  
the diaphragm just before  
securing it in the clamps  
then upon drying it contracts  
& becomes elastically stretched

Rec'd from  
Mr. Edison July 11, 1912  
# B.

MEMORANDUM

District

Date

Mr. Edison  
desires to have  
his application  
"cook" in the  
patent office.

1/17/12

G. B.

Mr. Meadowcroft:-

Will you kindly bring this to Mr. Edison's attention  
at the earliest possible moment.

Our action is due in this case before Sept. 16th, 1917 and  
Mr. Edison's early decision will be appreciated.

Wm. Kesler  
Legal Dept

I was under the impression  
that the thin diaphragm in  
application had a take up for

Sept. 8, 1917

permitting the diaphragm of  
being tightened more or less  
to Mr. Edison's attention  
Such evidence was absolutely  
necessary to make it practical

Chas. H. Kesler  
It considers if it was kept out

as there has been a misunderstanding  
we have more than 50 of these +  
every one has the take up -  
MUSEUM OF SHIPMENT

September 6, 1917

Mr. Edison:-

APPLICATION SERIAL NO. 710,151, FILED JULY 18,  
1912, ENTITLED PHONOGRAPH RECORDERS

This application covers the very thin diaphragm which in the case of celluloid should not exceed .006 of an inch in thickness, and which is securely and firmly clamped around its entire periphery instead of being loose as in some constructions, or imbedded in soft pliable material as in others. The central portion of the diaphragm is provided with a metallic shell having a waxy filling which secures the same to the diaphragm. As shown, this shell is approximately of a diameter one-third the diameter of the unsecured portion of the diaphragm. A stylus arm is connected to said shell and extends towards the periphery of the diaphragm.

The following claims have been finally rejected in this application:-

2. The combination of a sound box, a diaphragm of elastic material not greater than .006 of an inch in thickness and having a peripheral portion rigidly secured to said sound box, a rigid member secured to the central portion of the diaphragm over a considerable portion of the area of the diaphragm to insure vibration of the latter over substantially the whole of the unsecured portion thereof, a stylus arm connected to said member and extending towards the periphery of the diaphragm, and a stylus carried by said arm, substantially as described.

3. The combination of a sound box, a celluloid diaphragm not greater than .006 of an inch in thickness having a peripheral portion rigidly secured to said sound box, and a center piece secured to said diaphragm to insure vibration of the latter over substantially the whole of the unsecured portion thereof, said center piece having a diameter approximately one-third of the diameter of the unsecured portion of the diaphragm, substantially as described.



No single reference discloses the entire combination set forth in the claims, but the Examiner has cited a great many references thereagainst and rejected the claims on the ground that the subject matter thereof involves but a "judicious selection of old features of the art". The art will now be taken up briefly.

The first reference is the French patent to Coombs No. 382,360. In the construction described in this reference, the diaphragms are of very thin material and Coombs mentions the use of metal as well as celluloid. In the case of metal, the thickness thereof can be as low as .002 of an inch. Coombs states that where celluloid is used the thickness can be a little greater. Referring, however, to Figs. 1 and 3 of this patent, instead of using a separate center piece as you did, he bends the central portion substantially as shown. Could this be considered an equivalent of your construction, especially in view of such constructions as are shown in

Morecross, No. 676,270  
French patent to Dolone, No. 5697  
British patent to Cordock, No. 2455 of 1905  
British patent to James, No. 24387 of 1906

See also

British patent to Oaksford, No. 20768 of 1905  
British patent to Cahit, No. 14179 of 1901

It will therefore be seen that center pieces are old in connection with diaphragms which are not thin. Coombs discloses a thin diaphragm with a raised central portion which he claims obtains the same result.

The idea of securing the diaphragm rigidly around its periphery is also old in the art cited, and the device of Coombs is broadly of this construction, as will be seen from an inspection of Figures 14 and 15.

The stylus arm or lever is also old, as shown in Edison 430,278, and MacDonald 873,763, the Examiner holding that to use such a lever upon the devices shown in the other references would not amount to invention. Coombs does not use this type of stylus lever.

Referring to claim 2, it will be seen that the diaphragm is limited to a material, the thickness of which is not greater than .006 of an inch. Material which is much thinner than this is used by Coombs. It will also be seen that constructions in which the peripheral portion is rigidly secured to the sound box are old, as are also the rigid members secured to the central portion of the diaphragm. Each of the individual elements of this claim will be seen to be old, and the question is whether there is invention involved in assembling the several elements in combination as set forth in the claim, and consequently whether it is worth while to appeal this claim from a practical standpoint.

Claim 3 is limited to a celluloid diaphragm not greater than .006 of an inch in thickness, and is further limited to a center piece having a diameter approximately one-third the diameter of the unsecured portion of the diaphragm. It may be that the above limitations render the claim of no value, and there is also the question of whether the claim distinguishes sufficiently from

the art cited. We would like to have your opinion in this matter. In my judgment, the art is very close and it is doubtful whether the claims contain anything of merit, unless you have some practical reasons for thinking otherwise.

The following claims have been allowed in this application:

1. The combination of a sound box, a diaphragm of elastic material having a peripheral portion rigidly secured to said sound box, and a center piece secured to the diaphragm and comprising a shell and a filling therefor, substantially as described.

4. A diaphragm having secured thereto a center piece formed of a shell and a filling therefor, substantially as described.

5. A diaphragm having secured thereto a center piece formed of a metallic shell and a filling therefor, substantially as described.

6. A diaphragm having secured thereto a center piece formed of a shell and a filling therefor, said filling serving to secure the center piece to the diaphragm, substantially as described.

7. A diaphragm having secured thereto a center piece formed of a metallic shell and a filling therefor, said filling serving to secure the center piece to the diaphragm, substantially as described.

These claims cover the center piece which comprises a metallic shell having a filling for securing it to the diaphragm. This construction is new and has been allowed.

As stated above, claims 2 and 3 are under final rejection and action must be taken by September 16th, so that it will be necessary to give this matter immediate attention. Do you wish an appeal taken to the Board of Examiners-in-Chief?

Chas. H. Kesler  
Legal Dept.

*Abandon this  
application  
as you make  
the principal thing  
now on the*

Mr. Meadowcroft

Will you kindly bring this to Mr. Edison's attention

at the earliest possible moment.

An action is due in this case before Sept. 16, 1917.

and Mr. Edison's early decision will be appreciated.

*20*

*the*

*Chas. H. Kusler  
Legal Dept*

*100 copies a new  
application for  
lightning device  
for it was in  
Edison's  
Call in attention to it  
to  
Sept. 16, 1917*

Sept. 10, 1917

Mr. Edison:

APPLICATION SERIAL NO. 710,151. FILED JULY 18,  
1912. ENTITLED PHONOGRAPH RECORDERS

This application does not show a take-up for permitting the tightening up of the diaphragm. Apparently no mention was made of this feature when the application was prepared. From a talk with Mr. Werner I judge that the take-up resides in the annular knife edge with the clamping means for drawing the membrane over the edge. As far as we know, this feature is not covered in any of the pending applications or any of your prior patents, but can be covered by a new application if not barred by two years' public use or sale. Kindly advise us.

As to the present application mentioned in our  
memorandum to you of Sept. 6th, do you wish an appeal taken?

*Chas. H. Keeler*

CK-EH

Feb. 27, 1918

Mr. Meadowcroft:

Kindly see that Mr. Edison gets the  
enclosed memorandum and papers.

CHAS. H. KESTER  
CHK

Encs.  
CK-BH

Think in view of the art  
that I will abandon  
application

708

Feb. 27, 1918

Mr. Edison:

September 10th I wrote you about appealing your application No. 710,151 covering the use of very thin diaphragm clamped at its periphery. At the time you made a note as shown on the memorandum enclosed herewith.

It is thought advisable, if an application is to be filed, to do so immediately.

I am enclosing a sketch of a take-up which is thought to be the one you had in mind.

Take-ups or tightening devices are old however. See patent No. 825,738 enclosed herewith. The diaphragm A is stretched over annular member D and clamped between C and B. S and F are elastic members and can be adjusted to stretch the diaphragm.

See also patent No. 695,883 herewith. The diaphragm B is held between two flat clamping rings G and H, the whole resting on the flange of frame A. As the disk C with pressure ring F is adjusted the diaphragm will be stretched.

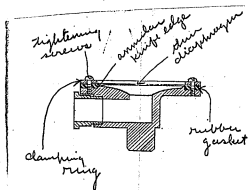
This Department believes that the take-up shown in the sketch is not patentable over the above art or at least the invention must be limited to the exact construction shown.

Do you desire us to prepare application papers covering the device shown in the sketch? If so, what are the important features therein which distinguish it from the devices of the two patents?

Or do you desire application papers prepared covering  
a different device? If so, describe and illustrate the same.

CHAS. H. KESLER

CK-EH





Do not  
change  
this  
form

Folio 871  
Thomas A. Edison  
Phonograph Records  
Serial No. 710,181  
Filed July 18, 1912  
Allowed September 27, 1917  
Final Fee Due March 27, 1918.

RECEIVED

Mr. Holden:

Any foreign applications?

Any divisional applications?

This application has not been assigned. Do you wish  
it assigned; if so, to whom?

CONSIDER

When do you wish final fee paid?

RECEIVED

RECEIVED

RECEIVED

RECEIVED

*Halpin*

*Do not pay final  
fee.  
Case same to  
attention of Mr.  
Kosler, about  
Feb. 1/18 -  
D.H.*

J. UNGER

RECEIVED

THOMAS A. EDISON, INC.  
MUSICAL PHONOGRAPH DIVISION OF

**Patent Series**

**Patent Application Files**

Folio # 872      Internal Combustion Engines

U.S. Patent #:    1160585

Primary Applicant: Edison, Thomas Alva, Jr

Date Executed:    7/22/1912

[PHOTOCOPY]

Serial No. 1160585

Applicant Thomas P. Edwards, Jr. Address Burlington, N.J.  
Burlington, Co.

Title Internal Combustion Engines

Filed July 25, 1912 Examiner's Room No. 169

Assignee \_\_\_\_\_

Ass't Exec. \_\_\_\_\_ Recorded \_\_\_\_\_ Liber \_\_\_\_\_ Page \_\_\_\_\_

Patent No. 1160585 Issued November 16, 1915

ACTIONS.

Granted August 21, 1912 16  
Amended August 6, 1913 17  
Rejected Sept. 11, 1913 18  
Amended Sept. 4, 1914 19  
Granted Oct. 2, 1914 20  
Amended April 19, 1915 21  
Rejected May 8, 1915 22  
Amended June 19, 1915 23  
Allowed June 23, 1915 24  
Final fee due Dec. 23, 1915 25  
Registered Paid Oct. 19, 1915 26  
 \_\_\_\_\_ 27  
 \_\_\_\_\_ 28  
 \_\_\_\_\_ 29  
 \_\_\_\_\_ 30

**VAULT**

FRANK L. DYER,  
 Counsel,  
 Orange, New Jersey.

# Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON, JR.,  
a citizen of the United States, residing and having a Post Office address at  
Burlington, in the County of Burlington and State of New Jersey

prays that letters patent may be granted to him for the improvements in

INTERNAL COMBUSTION ENGINES

set forth in the annexed specification; and he hereby appoints Frank L. Dyer  
(Registration No. 560), of Orange, New Jersey, his attorney, with full  
power of substitution and reboaction, to prosecute this application, to make  
alterations and amendments therein, to receive the patent, and to transact all  
business in the Patent Office connected therewith.

*Thomas A. Edison, Jr.*

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, JR., a citizen of the United States and a resident of Burlington, in the County of Burlington, and State of New Jersey, have invented certain new and useful improvements in <sup>fuel supplying means</sup> ~~internal~~ COMBUSTION ENGINES, of which the following is a description:-

My invention relates to improvements in <sup>fuel</sup> ~~internal~~ <sup>supplying means and</sup> ~~combustion~~ engines, and particularly to improvements in means for supplying the mixture of vaporized gasoline or other fuel to <sup>such</sup> ~~internal combustion~~ engines. In starting internal combustion engines, particularly in cold weather, difficulties are frequently encountered in vaporizing the fluid fuel to an adequate extent to cause the mixture to be exploded when the spark is passed. My invention includes improved means for aiding the vaporization of the fuel, both during starting and when running, for increasing the temperature of the mixture, and also means for introducing additional air into the mixture under favorable conditions so as to economize in the fuel consumed. My improved apparatus is particularly adapted to be manufactured as an attachment for internal combustion engines now in use. My invention includes also the combinations of parts and details of construction hereinafter described more fully and claimed.

For the further description of my invention, reference is had to the drawings accompanying and forming part of this specification and in which -

Figure 1 is a sectional view of apparatus embodying my invention, the section being taken on the line 1-1 of Figure 2.

Figures 2, 3 and 4 are sectional views taken respectively on the lines 2-2, 3-3, and 4-4 of Figure 1.

Figures 5 and 6 are views of details of construction.

Figure 7 is a sectional view of a modified form of apparatus embodying my invention; and

Figure 8 is a partly diagrammatic view of a modified form of electrical heater and deflecting means adapted for use in apparatus embodying my invention, instead of the corresponding parts illustrated in the preceding figures.

My improved apparatus is located in the conduit leading from the carburetor to the cylinders of the engine, and I have illustrated my invention as an attachment adapted to be secured between the carburetor flange and the flange of the induction pipe.

Referring particularly to Figures 1 to 6 inclusive, at 1 is shown the neck of the carburetor or pipe leading therefrom, and at 2 the flange of the same. At 3 is shown the induction pipe and at 4 the flange of the same. A casting 7 is provided having extending therethrough a cylindrical opening 8 of somewhat greater cross section than the cross section of the carburetor neck and induction pipe, and adapted to be secured between the carburetor flange and the induction pipe flange with the opening 8 in line with the carburetor neck and the induction pipe so as to constitute a conduit connecting the two. In the casting 7 and surrounding the opening 8 and separated there-

from by a thin wall is an annular opening 2 which is adapted to receive an electric heating coil 13. The opening 9 is adjacent to the carburetor flange 2. Adjacent to the induction pipe flange 4 is an annular opening or chamber 10 surrounding the opening 8 and separated therefrom by a thin wall. The electrical heating coil 13 and the chamber 10 adapted to receive heated fluid are therefore in thermal relation to the opening 8. The casting 7 is secured between the induction flange 4 and the carburetor flange 2 by bolts 5 and 6 or other suitable means, and gaskets 11 and 12, preferably of asbestos, are provided between the casting 7 and the carburetor flange 2 and induction pipe flange 4 respectively. The electric heating coil 13 is insulated from the casting 7 by means of the insulating material 14, which is preferably asbestos. The coil 13 is provided with terminals 15 and 16 which may be in the form of sockets adapted to co-operate with the plug contacts 17 and 18 mounted in the plug 19, said plug contacts 17 and 18 being connected in an electrical circuit 20 containing a source of current, such as a battery 21, said circuit 20 being provided with a switch 22 for controlling the same. Surrounding the thin wall of the casting 7 between the opening 8 and the annular opening or chamber 10 is an annular baffle plate 23 provided with openings or outway portions arranged in a manner hereinafter described. The opening 8 is provided with wires or metallic filaments 24 so disposed as to have large portions of the same in contact with the walls of the casting 7 surrounding the opening 8. A single wire may, of course, be used. This mass of wire is held

in place between members 25 extended across the ends of the opening 8 and secured in any suitable manner. I have illustrated the opening 8 as slightly beveled at its ends, and the members 25 correspondingly beveled at their ends and held between the casting 7 and the gaskets 11 and 12 by the pressure produced by the flanges 2 and 4. An inlet pipe 26 is provided leading into the chamber 10 through its outer wall and located diametrically opposite thereto is an outlet pipe 27 leading from the chamber 10 through its outer wall. The pipe 26 is adapted to be connected to the exhaust of the engine or to be fed with water which has been heated by cooling the engine. The exhaust gases or heated water enter through the pipe 26, pass through the chamber 10 on both sides of the annular baffle plate 23, and flow out through the outlet pipe 27, the path of the heated fluid being indicated by the arrows in Fig. 2. The portion of the casting 7 containing the chamber 10 may be designated as a fluid heater. The openings 28 in the baffle plate 23 are so arranged that they increase in size in passing through a point opposite the inlet pipe 26 around the two halves of the baffle plate to a point opposite the outlet pipe 27. Or, the holes may be of the same size, but increasing in number from a point opposite the inlet pipe 26 to a point opposite the outlet pipe 27. The heated gas or water which enters through the pipe 26 has its maximum temperature at this point and has become cooled somewhat before flowing out through the pipe 27. The arrangement of openings in the baffle plate 23 causes the inner wall of the casting 7 to be heated uniformly and causes a uniform distribution of heat through the deflecting wire or wires



24. An air inlet 46 is provided in the casting 7 at a point remote from the inlet pipe 26. From the air inlet 46 a pipe 29 leads through the chamber 10 throughout substantially one half of the same to a point substantially diametrically opposite the inlet 46, and leads into the opening 8 through the baffle plate 23 and the inner wall of the casting 7 at 30. Surrounding the air inlet 46 and secured to the casting 7 is a hollow member 31 provided on its interior with a port adapted to be closed by the valve 32 and provided also with an opening 35 extending about half way around its circumference and communicating with the port. When the valve 32 is closed, no air can enter through the opening 35 into the space communicating with the opening 46. Surrounding the portion of the member 31 containing the opening 35 is a cup-shaped member 34 mounted on the member 31 so as to be rotatably adjustable and having openings 36, 37, 38 and 39, one or more of which may be brought into communication with the opening 35 by adjusting the member 34 on the member 31. The openings 36, 37, 38 and 39 communicate with the external atmosphere and by adjusting the member 34 so as to have a larger or smaller number of openings 36, 37, 38 and 39 communicating with opening 35, the supply of air which enters through the air inlet 46 and pipe 29 into the opening 8 may be controlled. The adjustably rotatable member 24 is provided with a knurled rim 40 to facilitate adjusting the same. The member 34 has an opening extending through it which serves as a guide for the stem 33 of the valve 32. The end of the stem is provided with a nut serving as an abutment 41 and

a lock nut 42, and a coiled spring 47 is located between the nut abutment 41 and the stem guiding portion 34, serving normally to keep the valve 32 in closed position. A protecting cap 43 is screw threaded on the member 34 so as to protect the extended end of the valve stem 32, nuts 41 and 42, and the spring 47. A resilient open ring 45 shown in extended position in Figure 5 is seated snugly in a groove circumferentially surrounding the stem guiding end of the member 31, and frictionally engages the inside of the member 34 and serving to hold it in adjusted position.

The operation of my improved apparatus is as follows:- Assuming that the plug contacts 17 and 18 are connected with the socket contacts 15 and 16, when it is desired to start the engine, the switch 22 is closed, which causes current to be supplied to the heating coil 13 from the battery 21 to heat the coil. The heat from the coil is transmitted through the thin inner wall of the casting 7 and to the portions of the wire or wires 24 in contact with the wall. The wires rapidly become heated and readily communicate their heat to the mixture of air and gasoline or other fuel which flows from the carburetor into the opening 9 on its way to the induction pipe. By having a mass of metallic material of considerable area distributed throughout opening 9, such as wires 24, substantially all of the fuel mixture comes in contact with a heating surface, and the mixture is adequately heated to enable the engine to be easily started. After the engine has gotten into operation, the switch 22 may be opened. The exhaust gases from the engine or the hot water from the cooling

chambers flows in through inlet pipe 26 into chamber 10 around the baffle plate 23 on both sides thereof and contacts with the thin inner wall of the casting 7 at points where openings in the baffle plate occur. The exhaust gases or water flow out of the outlet pipe 27. The heat from the exhaust gases or water is transmitted through the thin wall of the casting 7 to the wire mass within the opening 8 and aids in the vaporization while the engine is running. As the engine gets up to speed, the valve 32 opens and air is drawn through the opening 46 and pipe 29 to the opening 8. The pipe 29 being surrounded by hot gases or water, air is introduced into the mixture in heated condition, thereby adding materially to the efficiency and economy of operation of my apparatus. The cup-like member 34 is adjusted so that a sufficient number of openings 36, 37, 38 and 39 communicate with the opening 35 to furnish the necessary supply of air for this purpose.

In Figure 7 I have illustrated a modification of my invention in which, instead of the wire mass 24, I employ a rotating <sup>helical 440</sup> spiral device to throw the mixture carrying the fuel particles against the inner wall of the casting 7 to enable the heat from the same to be communicated to the mixture. In this modification, ring-like members 50, 50' are threaded into the casting 7 at the two ends of the opening 8, the ring-like members 50, 50' having bridging members 51, 51' which serve as bearings for the cone-like ends 52, 52' of the shaft carrying the <sup>helical 440</sup> spiral member 53. Ball bearings may also be provided. The <sup>helical 440</sup> spiral member 53 is provided with perforations. Under the influence of the draft

of the mixture, the <sup>helical 246/3</sup> spiral member 53 is caused to rotate on its bearings and the fuel particles are thrown against the inside wall of the casting 7 and heated. Otherwise than as illustrated and described, the construction of the apparatus shown in Figure 7 is the same as that illustrated in the preceding figures.

In Figure 8 I have illustrated a modified form of electrical heating device which may be utilized in any of the structures illustrated in the preceding figures. This form of electrical heater consists of a plurality of radially disposed metal pieces 60 having their ends extended into the opening 8 and the portions without the opening 8 surrounded by heating coils 61. The ends of the metal pieces 60 which extend into the opening 8 are provided with perforated deflecting members at an angle to the normal line of flow of mixture through the opening 8, the deflecting members 62 serving to communicate heat conducted from the heating coils to the mixture and also to deflect the mixture into contact with the walls of the casting 7.

Having now described my invention, what I claim as new therein and desire to protect by Letters Patent is as follows:-

~~Claims 1, 2, & 3 rewritten - See insert - A 5/6/18~~  
1. In an internal combustion engine, means for heating the fuel mixture <sup>causing heat from heaters</sup> including a fluid heater and an electrical heater, substantially as described.

2. In an internal combustion engine, means for heating the fuel mixture including a fluid heater, an electrical heater, and means for causing heat from said heaters to be communicated to the fuel mixture, substantially as described.

3. In an internal combustion engine, means for heating the fuel mixture including a fluid heater, an electrical heater, and heat conducting material in thermal relation to said heaters and interposed in the path of the fuel mixture, substantially as described.

4. In an internal combustion engine, means for heating the fuel mixture including a fluid heater, an electrical heater, and heat conducting material comprising a mass of wire in thermal relation to said heaters and interposed in the path of the fuel mixture, substantially as described.

3x. <sup>fuel supplying means 7/1/14</sup> In an internal combustion engine, the combination of means for heating the fuel mixture including a fluid heater and an electrical heater, and means for supplying air to the mixture through one of said heaters, whereby the air thus supplied is heated, substantially as described.

4x. <sup>fuel supplying means 7/1/14</sup> In an internal combustion engine, the combination of means for heating the fuel mixture including a fluid heater and an electrical heater, and means for supplying air to the mixture through said fluid heater, whereby the air thus supplied is heated, substantially as described.

5x. <sup>fuel supplying means 7/1/14</sup> In an internal combustion engine, the combination of means for heating the fuel mixture including a fluid heater, an electrical heater, and heat conducting material in thermal relation to said heaters and interposed in the path of the fuel mixture, and means for supplying air to the fuel mixture through said fluid heater, whereby the air thus supplied is heated, substantially as described.

*Cancelled 9/4/14*

8. In an internal combustion engine, the combination of means for heating the fuel mixture including a fluid heater and an electrical heater, and means for supplying air to said mixture through said fluid heater whereby the air thus supplied is heated, the operation of said means being controlled by the draft of the fuel mixture supplied to the engine, substantially as described.

*done*  
*cancel*

9. In an internal combustion engine, the combination of means for heating the fuel mixture including a fluid heater, an electrical heater, and heat conducting material in thermal relation to said heaters and interposed in the path of the fuel mixture, and means for supplying air to said mixture through said fluid heater, whereby the air thus supplied is heated, the operation of said means being controlled by the draft of the fuel mixture supplied to the engine, substantially as described.

*cancel*

*fuel supplying means 9/4/14*

*6*  
= 10. In an internal combustion engine, the combination of means for heating the fuel mixture including a fluid heater and an electrical heater, and adjustable means for supplying air to the mixture through said fluid heater, and adjustable means including an adjustable opening whereby the air thus supplied is heated, substantially as described.

*fuel supplying means 9/4/14*

*7*  
= 11. In an internal combustion engine, the combination of means for heating the fuel mixture including a fluid heater, an electrical heater, and heat conducting material in thermal relation to said heaters and interposed in the path of the fuel mixture, and adjustable means for supplying air to the fuel mixture through said fluid heater, whereby the said adjustable means including an adjustable opening whereby the air thus supplied is heated, substantially as described.

*cancel adjustable opening 8/6/13*

*do 10*

has independent chambers -  
one containing an electrical heater  
& other adapted to receive heated fluid

Claims 12, 13, 14 recited in document A

4/13

12. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe, said member having therein an electrical heater and a chamber adapted to receive heated fluid, said electrical heater and chamber being in thermal relation to the opening for the passage of the fuel mixture, substantially as described.

do 12  
13. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe, said member having therein an electric heater and a chamber adapted to receive heated fluid, said electrical heater and chamber surrounding and being in thermal relation to the opening for the passage of the fuel mixture, substantially as described.

do 13  
14. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe, said member having therein an electric heater and a chamber adapted to receive heated fluid, said electrical heater and chamber surrounding and being in thermal relation to the opening for the passage of the fuel mixture, and said opening having therein means for facilitating the transfer of heat from the heater and chamber to the fuel mixture, substantially as described.

9.  
72. <sup>means for supplying fuel to 7/4/18</sup>  
= 28. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe, said member having therein an electrical heater and a chamber adapted to receive heated fluid, said electrical heater and chamber surrounding and being in thermal relation to the opening for the passage of the fuel mixture, said opening having means therein for facilitating the transfer of heat from the heater and chamber to the fuel mixture, comprising a mass of wire having a portion thereof in contact with the walls of the opening, substantially as described.

10.  
= 74. <sup>means for supplying fuel to 7/4/18</sup>  
28. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe, said member having therein an electrical heater and a chamber adapted to receive heated fluid, said electrical heater and chamber being in thermal relation to the opening for the passage of the fuel mixture, and means for supplying air to said mixture through said chamber, whereby the air thus supplied is heated, substantially as described.

11.  
= 74. <sup>means for supplying fuel to 7/4/18</sup>  
28. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe, said member having



do 10

therein an electrical heater and a chamber adapted to receive heated fluid, said electrical heater and chamber being in thermal relation to the opening for the passage of the fuel mixture, and adjustable means for supplying air to said mixture through said chamber, whereby the air thus supplied is heated, substantially as described.

12. ~~12~~ <sup>13</sup> means for supplying fuel to <sup>14</sup> 14. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe, said member having therein an electrical heater and a chamber adapted to receive heated fluid, said electrical heater and chamber being in thermal relation to the opening for the passage of the fuel mixture, and means for supplying air to said mixture through said fluid heater whereby the air thus supplied is heated, the operation of said means being controlled by the draft of the fuel mixture supplied to the engine, substantially as described.

13. ~~13~~ <sup>14</sup> means for supplying fuel to <sup>15</sup> 15. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe, said member having therein an electrical heater and a chamber adapted for the passage of heated fluid therethrough, said electrical heater and chamber surrounding and being in thermal

relation to the opening for the passage of the fuel mixture, said chamber being provided with a baffle plate located along the chamber wall in proximity to the opening for the passage of the fuel mixture, said baffle plate having openings therein arranged so as to expose more and more of the chamber wall to the heated fluid as it passes from the inlet of the chamber to the outlet thereof, substantially as described.

Insert A - Claims 1, 2, 2<sup>3</sup> 8/6/13

Insert A<sup>1</sup> - " 12, 13 & 14 1/6/13

Insert A<sup>2</sup> - " 20, 21, 22 & 2 8/6/13

Insert B - Claim 2 7/11/14

Insert B<sup>3</sup> - Claims 16 - 7/11/14

Insert C - Claim 14 4-19-15

This specification signed and witnessed this 22<sup>nd</sup> day of July 1912

Witnesseth: Thomas A. Edison Jr.

1. Henry Holzmanna
2. A. H. Greener

## Oath.

State of New Jersey } ss.,  
County of ~~Essex~~  
BURLINGTON

THOMAS A. EDISON, JR.,

, the above named  
petitioner, being duly sworn, deposes and says that he is a citizen of the United  
States, and a resident of Burlington, Burlington County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the  
improvements in

### INTERNAL COMBUSTION ENGINES

described and claimed in the annexed specification; that he does not know and  
does not believe that the same was ever known or used before his invention or  
discovery thereof; or patented or described in any printed publication in the  
United States of America or any foreign country before his invention or  
discovery thereof, or more than two years prior to this application; or patented  
in any country foreign to the United States on an application filed more than  
twelve months prior to this application; or in public use or on sale in the  
United States for more than two years prior to this application; and that no  
application for patent upon said invention has been filed by him or his legal  
representatives or assigns in any foreign country.

Thomas A. Edison Jr.  
Sworn to and subscribed before me this 22<sup>nd</sup> day of July 1912

A. H. Greener

[Seal]

Notary Public.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON Aug. 21, 1912.

Thomas A. Edison, Jr.,

Care, Frank L. Dyer,

Orange, N.J.



Please find below a communication from the EXAMINER in charge of your application.

No. 711,398, Internal Combustion Engine, filed July 25, 1912.

6-5-2021

*E. B. M. W. C.*

Commissioner of Patents.

Numerals 8, 11, 30, 35 and 39 should be applied to figure 1. There is no line 4-4 on figure 1. Numerals 23, 28, 37, 38, 39 and 43 should be applied to figure 2. Numeral 50 should be applied to figure 7.

The title is incorrect. Applicant has not made an improvement in internal combustion engines but in a heater for the gaseous mixture therefor.

Page 7, lines 20, 27 and 28: "spiral" should read helical.

In line 1 of each of the claims "in an internal combustion engine" should read in a heater for gaseous fuel.

Claims 1 to 4, 12 to 14 are rejected on British patent to Evans, 19,578 of 1908, (48-148, 1); see figure 4.

In regard to claim 4 the patent shows the full equivalent of the mass of wire. Note the baffles 9.

Claim 6 is rejected as containing nothing patentable over claim 5. It is immaterial whether the air passes through the fluid heater or not.

Claims 8 and 10 are rejected as containing nothing patentable over claim 5. It is common in the art to provide suction operated air valves and means for adjusting the same; see Loose, 959,950, May 31, 1910, (48-180, 1).

Claims 9 and 11 are rejected as not patentably distinguishing from claim 7.

Claims 17 and 18 are rejected as containing nothing patentable over claim 16.

Claims 5, 7, 15, 16 and 19 are regarded as allowable.

Examiner.

IN THE UNITED STATES PATENT OFFICE.

Thomas A. Edison, Jr.,  
INTERNAL COMBUSTION ENGINES

Filed July 25, 1912

Room No. 169.

Serial No. 711,398.

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of August 21, 1912, please amend the above entitled case as follows:-

Page 7, line 20, change "spiral" to - helical -.  
Line 27, change "spiral" to - helical -. Line 28, change  
"spiral" to - helical -.

Page 8, line 1, change "spiral" to - helical -.

Rewrite claims 1, 2 and 3 as follows: -

a  
= 1. In <sup>fuel supplying means 7/24/12</sup> an internal combustion engine, means for heating the fuel mixture comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture and provided with separate chambers in thermal relation to said opening, and an electric heater contained in one of said chambers, the other of said chambers being adapted to receive heated fluid, substantially as described.

2. In an internal combustion engine, means for heating the fuel mixture including a fluid heater, a chamber separated from said fluid heater, an electrical heater contained in said chamber, and means for causing heat from said heaters to be communicated to the fuel mixture, substantially as described.

3. In an internal combustion engine, means for heat-

ing the fuel mixture including a fluid heater, a chamber separated from said fluid heater, an electrical heater contained in said chamber, and heat conducting material in thermal relation to said heaters and interposed in the path of the fuel mixture, substantially as described. -

Claim 10, line 5, after "heated," insert - said adjustable means including an adjustable opening. - .

Claim 11, line 7, after "heated," insert - said adjustable means including an adjustable opening. - .

Rewrite claims 12, 13 and 14 as follows: -

*Forwarded 9/11/44*  
12. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe and having separate chambers, and an electrical heater contained in one of said chambers, the other of said chambers being adapted to receive heated fluid, said electrical heater and chambers being in thermal relation to the opening for the passage of the fuel mixture, substantially as described. *cancel*

*8* 13. *means for supplying fuel to*  
In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening therethrough for the passage of the fuel mixture from the carburetor to the induction pipe and having independent chambers surrounding the opening for the passage of the fuel mixture, and an electrical heater contained in one of said chambers, the other of said chambers being adapted to receive heated fluid, substantially as described. *again*

8.  
= ~~X~~ *Reviser for supplying fuel to 9/4/14*  
In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening there-through for the passage of the fuel mixture from the carburetor to the induction pipe, said member having two independent chambers, <sup>separated by</sup> the opening for the passage of the fuel mixture, an electrical heater contained in one of said chambers, and the other of said chambers being adapted to receive heated fluid, and said opening having means therein for facilitating the transfer of heat from the heater and chambers to the fuel mixture, substantially as described. -

Claim 16, line 7, change "electric" to - electrical - .

Claim 17, line 11, after "heated," insert - said adjustable means including an adjustable opening, - .

Add the following claims: -

20. In an internal combustion engine, a device adapted to be located between the induction pipe and the carburetor, comprising a heat conducting member with an opening there-through for the passage of the fuel mixture from the carburetor to the induction pipe, said member being provided with heating means and said opening having means therein for facilitating the transfer of heat from the heating means to the fuel mixture, comprising a mass of wire having a portion thereof in contact with the walls of the opening, substantially as described. *changed*

21. In an internal combustion engine, the combination of means for heating the fuel mixture, and means for supplying air to the mixture in thermal relation to said heating means, whereby the air thus supplied is heated, substantially as described. *changed*



15  
22. ~~means for supplying fuel to~~ <sup>claim 15</sup>  
~~In an internal combustion engine, a device adapted~~ <sup>came over</sup>  
~~to be located between the induction pipe and the carburetor,~~ <sup>4/19/15</sup>  
~~comprising a heat conducting member with an opening there-~~  
~~through for the passage of the fuel mixture from the carbur-~~ <sup>2/1/14</sup>  
~~ator to the induction pipe, means for heating said member,~~  
~~and means for introducing heated air into said opening, sub-~~ <sup>8/2/14</sup>  
~~stantially as described.~~ <sup>Janet B. 1/1/14</sup>

*Next C claim 24 4-19-15*

REMARKS

No change has been made in the title of the application or in the introductory clauses of the claims, because applicant considers that his invention does constitute an improvement in internal combustion engines and includes more than merely a heater for the gaseous mixture for such engines. Applicant's invention comprises not only means for heating the gaseous mixture, but also means for introducing heated air into the mixture.

Claims 1 to 3 inclusive and 12 to 14 inclusive as rewritten are believed to be clearly patentable over the British patent to Evans, No. 19578 of 1908, because those claims set forth that the chamber containing the electrical heater is separate from the chamber adapted to receive heated fluid. In the structure shown in the British patent, the electrical heater is placed in the chamber which receives the heated fluid, and this structure is believed to be impracticable because of the difficulty of maintaining proper insulation of the wire used in the electrical heater where such insulation is in contact with the heated fluid. In applicant's structure this difficulty is entirely overcome.

Reconsideration of the rejection of claim 4 is requested. The mass of wire in thermal relation to the

heaters and interposed in the path of the fuel mixture has certain advantages over the radiating ribs 9 employed in the structure shown in the British patent. By the use of a mass of wire, substantially all of the particles of fuel come in contact with portions of a heated conductor where-by the fuel is effectively heated and broken up. The use of a mass of wire serves also to keep the fuel clean, and offers less resistance to the passage of the fuel mixture than where baffles are employed.

Claim 6 is believed to be clearly patentable over allowed claim 5. Allowed claim 5 covers a genus of which claim 6 covers a particular species. There are certain advantages in supplying air to the mixture through the fluid heater rather than through the electrical heater, due to the fact that the electrical heater is ordinarily used only at starting, whereas the fluid heater is continuously acting while the engine is in operation.

Reconsideration of the rejection of claims 8, 9 and 18 is requested. Applicant is not claiming broadly the idea of having air supplying means controlled by the draft of the fuel mixture supplied to the engine, but in these claims a new combination is set forth not found in any of the references.

Claims 10, 11 and 17 as amended are believed to be clearly patentable. The adjustment of an air valve by changing the tension of a spring, as is disclosed in the patent to Loose, No. 959,950, is necessarily limited in range, and applicant has provided adjustable means, including an adjustable opening, which enables applicant's invention to be readily applied to engines having different characteristics and using fuels of different qualities.

New claim 20 is believed to be patentable over the art cited because of the advantages set forth above of a mass of wire, in communicating heat to the fuel mixture and breaking up the same, over the radiating ribs shown in the British patent or the baffles shown in Loose.

New claims 21 and 22 distinguish from the art cited - claim 21 in setting forth that the means for supplying air to the mixture is in thermal relation to the heating means, whereby the air thus supplied is heated - and claim 22 by the inclusion of means for introducing heated air into the opening forming a passageway for the fuel mixture.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON, JR.

By Frank C. Alger

His Attorney

Orange, New Jersey

August 6, 1913

HL-JS

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, JR.

INTERNAL COMBUSTION ENGINES

Filed July 25, 1912

Serial No. 711,398

Drafting Division.

HONORABLE COMMISSIONER OF PATENTS:

S I R :

The Official Draftsman is authorized and requested to make the following changes in the drawings, said changes being indicated in red ink on the enclosed prints:

Apply numerals 8, 11, 30, 35 and 39 to Figure 1.

Show line 4-4 in Figure 1.

Apply numerals 23, 28, 37, 38, 39 and 43 to Figure 2.

Apply numeral 50 to Figure 7.

If there is any charge for making these changes, please make same against the account of Thomas A. Edison, Incorporated.

After the changes have been made, please send a print of each sheet of drawing to applicant's attorney.

Respectfully,

THOMAS A. EDISON, JR.

BY Frank P. Dyer

His Attorney.

Orange, New Jersey

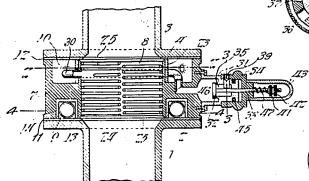
August 6, 1913.

HL/JU

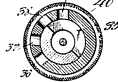
*Jul 22*

56-  
108

*Fig. 1*



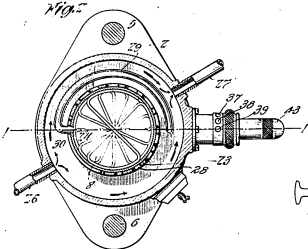
*Fig. 2*



*Fig. 3*



*Fig. 4*



*Fig. 5*



*Witnesses:*

*Frank D. Lewis*  
*Henry S. L. L. L.*

*Inventor:*

*Thomas A. Lewis Jr.*  
*By* *James E. Lewis*  
*Att. Reg.*

July 872

Fig. 11

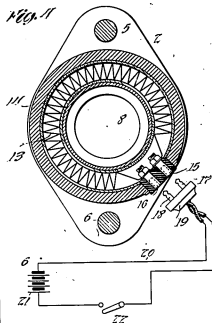


Fig. 7

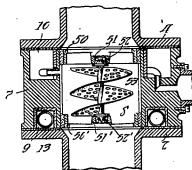
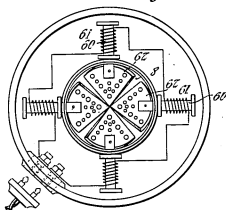


Fig. 5



Witnesses:  
Frank D Lewis  
Henry L. Latham

Inventor:  
Lorne A. Edging  
G. 172 and 173  
his Atty.

Div. 71. Room 160

2-260

Paper No. 4

Address  
"The Commissioner of Patents,  
Washington, D. C."

All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

CAS/100

Sept. 11, 1913

Frank L. Dyer,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Jr., Serial No. 711,398, Internal Combustion En-  
gine, filed July 25, 1912.

18-2601

Thomas A. Edison, Jr. *Thomas A. Edison, Jr.*  
Commissioner of Patents

This case has been reconsidered in view of the amendment  
of August 7, 1913.

In regard to the title it is still felt that it is not such  
a one as correctly indicates the nature and design of the inven-  
tion, as required by the Revised Statute, Section 4884. It will  
be noted that this case shows no internal combustion engine and  
to entitle it thus would, it is believed, be misleading. The  
device appears no more an improvement in internal combustion en-  
gines than the improvement of an automobile wheel would be an  
improvement in automobiles.

Claim 2 is rejected on Ville, (French) 350,953, April 22,  
1905 (48-148). It will be noted that the electric heater is  
mounted in a cylindrical chamber. The material from which the  
heater is made, that is to say the inner wall of A, is the means  
for causing the heat to be communicated to the mixture.

Claim 3 is rejected on Ville, in view of Evans, of record.  
There would be no invention in providing baffles in the Ville  
device.

Claim 4 is rejected on Evans, of record, in view of its being  
common to provide wires inside the heater which will serve to  
radiate the heat from the side walls and communicate it to the

mixture; see

Winton, 869,675, October 29, 1907,  
Fritz, 1,015,741, February 6, 1912,

(X-Ref. 48-180.1).

Claims 6 and 8 are regarded as substantially equivalent, not patentably differing one from the other, in view of the common use of suction operated valves, of which Loose, of record, shows an example.

Claims 7 and 9 are regarded as equivalents for the same reason as stated above.

Claims 1, 12 and 13 are also regarded as being practically the same in scope; whatever may be included in one and not in the other, is included in the latter by natural inference. There would be no utility to applicant's device if the heater and chambers were not arranged in thermal relation to the opening through which the mixture passes.

Claim 20 is rejected on Fritz or Winton, cited, attention being also called to

Dawson, 668,953, February 26, 1901 (X-Ref. 48-180.1).

This patent shows coarse copper gauze which in addition to the baffles, will cause the heat to be radiated from the exhaust pipe.

Claims 21 and 22 are rejected on Loose, of record. It is old to provide a heater for the mixture flowing from the carburetor and to introduce air into this mixture, and while there is regarded as being no invention in heating the air, it is thought that the Loose structure will do this more or less, the whole casing being highly heated by the exhaust gases. See also

Crone, 1,038,300, September 10, 1912

(X-Ref. 48-180.1).

The claims not above referred to are regarded as allowable.

It is believed however that applicant has somewhat unduly multiplied the number of claims.



IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison, Jr.

INTERNAL COMBUSTION ENGINES

Room No. 169

Filed July 25, 1912

Serial No. 711,398

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
September 11, 1913, please amend the above entitled case  
as follows:-

Page 1, lines 6 and 7, change "INTERNAL COMBUSTION  
ENGINES" to - FUEL SUPPLYING MEANS - . Lines 9 and 10,  
change "internal combustion engines" to - fuel supplying  
means - . Line 12, change "such" to - internal com-  
bustion - .

Claim 1, line 1, change "an internal combustion  
engine" to - fuel supplying means - .

Cancel claims 2, 3 and 4 and insert the following  
claim: -

2. In fuel supplying means, means for heating  
the fuel mixture having an opening therethrough for the  
passage of the fuel mixture and provided with separate  
chambers and having an electric heater contained in one of  
said chambers, the other of said chambers being adapted to  
receive heated fluid, and heat conducting material disposed  
in the path of the fuel mixture and in thermal relation to  
said chambers, substantially as described. -

Claims 5, 6 and 7, line 1, change "an internal combustion engine" to "fuel supplying means - .

✓ Cancel claims 8 and 9.

✓ Claims 10 and 11, line 1, change "an internal combustion engine" to "fuel supplying means - .

✓ Cancel claim 12.

✓ Claim 13, line 1, after "In" insert - means for supplying fuel to - .

✓ Claim 14, line 1, after "In" insert - means for supplying fuel to - . Line 6, change "surround" to "surrounding" - .

✓ Claims 15, 16, 17, 18 and 19, line 1, after "In" insert - means for supplying fuel to - .

✓ Cancel claims 20 and 21.

✓ Claim 22, line 1, after "In" insert - means for supplying fuel to - . Lines 4 and 5, cancel "from the carburetor to the induction pipe". Line 6, cancel "heated". Line 6, after "opening" insert "including an

extended passageway in close thermal relation to said heating means whereby the air introduced is preheated - .

Re-number claims 5, 6, 7, 10, 11, 13, 14, 15, 16, 17, 18, 19 and 22 as 3 to 15 inclusive respectively.

Add the following claim: -

16. In fuel supplying means, the combination of means for heating the fuel mixture including a fluid heater and an electrical heater, and means for supplying air to the mixture including an extended passageway in close thermal relation to one of said heaters, whereby the air thus supplied is preheated, substantially as described. -

R E M A R K S

In new claim 2, the feature of the separate chambers in addition to the opening for the passage of the fuel mixture is brought out, which distinguishes this claim clearly from the references cited against claims 2, 3 and 4 as well as from the other references.

It is believed that claim 8 is patentably different from claim 1. For example, in claim 8 it is set forth that the independent chambers surround the opening for the passage of the fuel mixture. Claim 15 as amended is believed to be clearly patentable over the patent to Loose. Any preheating of the air that may occur in the Loose device is merely incidental, and Loose does not provide an extended passageway for the air in close thermal relation to the heating means. New claim 16, in which the feature of preheating the air is also set forth, is believed to be clearly patentable, the two heaters being recited in this claim as well as the extended passageway in close thermal relation to one of the heaters.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON, JR.

By Frank L. Oyer

His Attorney

Orange, N. J.

September 4, 1914

HL-JS

Div. 31... Room 109.

2-200

Paper No. 6

<sup>delivered by</sup>  
"The Commissioner of Patents,  
Washington, D. C.,  
and not any official by name.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

October 9, 1914.

Frank L. Dyer,

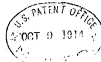
Orange,

N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Jr., No. 711,398, filed July 25, 1912,

Internal Combustion Engine.



*Thomas Ewing*  
Commissioner of Patents.

48-5242

This case as amended Sept. 5, has been considered.

The title "Fuel Supplying Means" is no more applicable to the subject matter claimed than the former title of "Internal Combustion Engine". The device is a heater.

Claims 1 and 8 do not patentably distinguish from each other in view of the showing of Ville of record, who shows the securing of a thermal relation between two chambers by one surrounding the other.

Claim 15 is rejected on Stewart, 1,046,344, Dec. 3, 1912, 48-148, 1. There is an extended passageway between the heating coil and the wall of the member 1.

Claim 16 is rejected on claim 3 in view of Stewart, cited. The limitation added to claim 3 has no novelty in view of Stewart shown.

The remaining claims stand allowed.

Examiner.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison, Jr.

INTERNAL COMBUSTION ENGINES

Room No. 169.

Filed July 25, 1912

Serial No. 711,898

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
October 9, 1914, please amend the above entitled case as  
follows:-

Cancel claim 8.

Renumber claims 9 to 14 inclusive as 8 to 13  
inclusive respectively.

Cancel claim 15 and insert the following claim  
in lieu thereof: -

*Cancelled June 10, 1914*

14. In fuel-supplying means, the combination  
of means for heating the fuel mixture, and means for sup-  
plying air to the mixture including an extended passageway  
in close thermal relation to said heating means and through-  
out substantially the entire length of which air is passed  
and heated prior to its introduction into the mixture,  
substantially as described. -

Claim 16, line 5, after "heaters" insert - and  
throughout substantially the entire length of which air  
passes before entering the mixture - . Renumber this  
claim as 15.

#### REMARKS

Applicant is still of the opinion that the present title is a proper one for this application, for, as stated in the specification, the invention relates to fuel supplying means, and particularly to means for supplying the fuel mixture to internal combustion engines. It is not believed that any further change in the title should be required, the following decisions being in point on this matter:- Ex parte Mackintosh, 162 O.G. 783, in which it was held that an applicant should be allowed within reasonable limits to name the title of his invention; and Ex parte Wiland, 162 O.G. 957, in which it was held that an applicant should be permitted to retain a title which he believes to be peculiarly fitting or desirable, unless such title is, in fact, inaccurate or improper for some substantial reason.

Claim 6 has been canceled in view of the Examiner's position that it did not distinguish patentably from claim 1, and because it is believed that this feature of the invention is sufficiently covered by claim 1.

Claims 14 and 15 distinguish clearly from Stewart No. 1,046,344 by setting forth that the means for supplying air to the mixture includes an extended passageway, throughout substantially the entire length of which air is passed before entering or being introduced into the mixture. The structure shown in Stewart cannot be said to have such a passageway. The conduit in the Stewart structure through which the mixture passes has openings on all sides of it for the entrance of air, and the air is therefore not passed through substantially the entire length of any extended passageway. The advantage of applicant's

structure in this respect resides in the fact that the air passes for a greater distance in heat-receiving relation to the heating means and consequently becomes more thoroughly heat before entering the mixture.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON, JR.

By Frank L. Myer

His Attorney

Orange, New Jersey

April 19, 1915

HL-JS



Div. 31 Room 169.

2-200

The Commissioner of Patents,  
Washington, D. C.,  
and not any official by name.

Paper No. 872  
All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

May 8, 1915.

Frank L. Dyer,

Orange,

N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Jr., No. 711,300, filed July 26, 1912.

Internal-Combustion-Engine.



Thomas Ewing  
Commissioner of Patents.

This case as amended April 20, has been considered.

Claim 14 is finally rejected on Stuart of record,  
for reasons of record. This claim is of the same scope as the pre-  
viously considered claim 15 and submits for consideration the same  
question, namely, the scope of the term "extended passageway". As  
previously stated Stuart is held to show such a passageway; the  
rejection is therefore made final.

The remaining claims are allowed.

At conference with Mr. Edmundo, it was decided  
to cancel cl 14, & let the application go to  
issue -

June 7, 1915

H2

Cancel 14 -



IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison, Jr.

INTERNAL COMBUSTION ENGINES

Room No. 169.

Filed July 25, 1912

Serial No. 711,398

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
May 8, 1915, please amend the above entitled case as  
follows:-

Cancel claim 14.

Renumber claim 15 as claim 14.

R E M A R K S

The above amendment puts this application in  
condition for allowance, and the Examiner is requested to  
pass the same to issue.

Respectfully submitted,

THOMAS A. EDISON, JR.

By Frank L. Lyon

His Attorney

Orange, New Jersey

June 10, 1915

HL-JS

ADDRESS ONLY  
THE COMMISSIONER OF PATENTS,  
WASHINGTON, D. C.

JWB2-181

Serial No. 711398

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON June 23, 1915

Thomas A. Edison, Jr.,

Sir: Your APPLICATION for a patent for an IMPROVEMENT in  
Fuel supplying means

filed July 25, 1912, has been examined and ALLOWED.

The final fee, TWENTY DOLLARS, must be paid not later than  
SIX MONTHS from the date of this present notice of allowance.  
If the final fee be not paid within that period, the patent on  
this application will be withheld, unless renewed with an  
additional fee of \$15, under the provisions of Section 4897,  
Revised Statutes.

The office delivers patents upon the day of their date, and  
on which their term begins to run. The printing, photolitho-  
graphing, and engrossing of the several patent parts, prepara-  
tory to final signing and sealing, will require about four  
weeks, and such work will not be undertaken until after payment  
of the necessary fee.

When you send the final fee you will also send, DISTINCTLY  
AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVEN-  
TION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE  
(which is the date of this circular), DATE OF FILING, and, if  
assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an  
assignment containing a REQUEST to that effect, together with  
the FEE for recording the same, must be filed in this office on  
or before the date of payment of final fee.

After issue of the patent uncertified copies of the draw-  
ings and specifications may be purchased at the price of FIVE  
CENTS EACH. The money should accompany the order. Postage  
stamps will not be received.

Final fees will NOT be received from other than the appli-  
cant, his assignee or attorney or a party in interest as shown  
by the records of the Patent Office.

Respectfully,

*Thomas Ewing*  
Commissioner of Patents.

Frank L. Dyer,

Orange,

N.J.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNIDENTIFIED CHECKS WILL NOT BE ACCEPTED.

Rec'd 5/14/11- 115

Burlington-N.J.

My dear Mr. Hanahan -

About a week

ago I received a letter from Mr. Dyer-  
and also some Patent papers on  
Carburettas and etc. Mr. Dyer stated  
that you thought I could get a Patent  
on the Carburetta which I submitted  
to you - This is very encouraging  
and I am naturally very anxious  
to get the matter going - For the past  
few days I have been a little under  
the weather and really have been  
unable to look over the papers as  
I would like too - but someday  
this week I will certainly do so -  
and will try and point out the  
advantages my carburetta has over  
those submitted -

In the meantime Mr. Hanahan -  
I am sending you a rough description  
of a little flange I have just completed.  
This flange is the improvement I  
spoke about to Mr. Dyer - and which

he said to send to you. The drawings  
of the Heater other than the one in  
Carburetta can be cancelled - for  
this Flange takes its place -

This flange I have working on my  
Car - and to say it is a little wonder  
would be saying it mildly - I have  
had a great deal of experience with  
gasoline engines but never have  
experienced such a wonderful  
improvement as this little flange  
makes - I use a great deal less  
gasoline and get more power -  
It gives instant control over  
throttle and is up to speed  
instantly - I cannot tell you  
the many advantages it has - you  
really have to see the Engine work  
to appreciate its full value -

Two friends of mine both owning  
Packard Cars were up to see me today  
and I demonstrated the running  
of the engine - (although I did not  
show them how I done it) It was  
such a wonder to them that they  
immediately gave me an order  
for two flanges for their cars -

Of course before thinking of such a thing I want some kind of protection before the public gets it - it might be that I am infringing - but a search will be required to determine this - As soon as you find that a search clears me - have I a right to make them after the application is filed?

If the explanations I have given on the flange is too rough Mr. Hamahan I will make a regular drawing of it if you wish - but I am so anxious to have a search made at once - that I thought I would not wait to make a drawing -

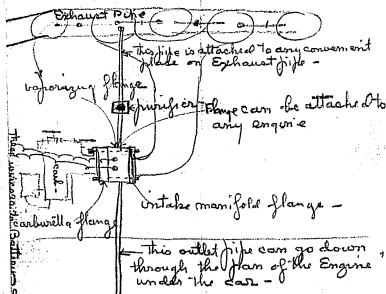
I am sending a little sketch of my original flange which will give you some idea of it -

Hoping to hear from you soon.

I am

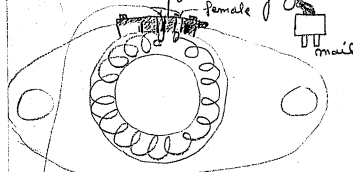
Yours very truly  
Thomas Edison

(1)  
The flange is made to fit between the carburettor flange and the flange on the intake manifold as follows -

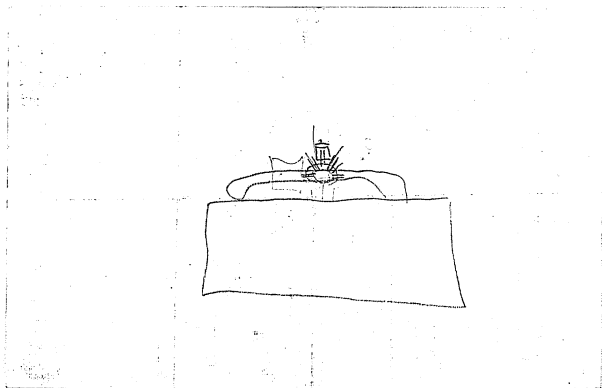
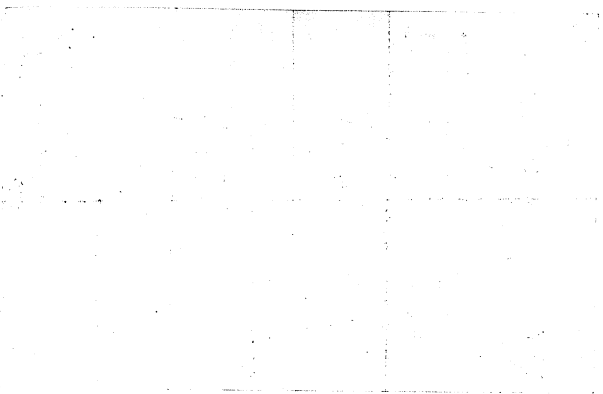


The flange is especially made but holes are bored to fit any standard pipe flange - such as used on most autos -

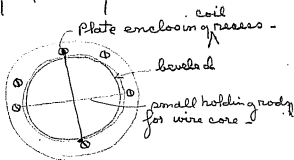
(2)  
Description of flange is as follows -  
On one side of the flange is a small resistance coil which surrounds the vaporizing chamber. The walls of the vaporizing chamber is specially thin so as to allow heat from coil to take immediate action on mixture. The coil is insulated by asbestos tape wound around it and sets down in recess in flange. The terminals are connected to binding posts on top of flange - which are insulated by means of fibre inserts.



(Instead of binding posts - which are liable to be broken off) I have devised a flush connection - such as sketched above -

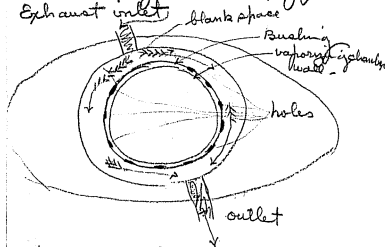


Over the top of this recess and flush with the outside of flange is a plate fastened down by screws. This plate is slightly beveled on inside so that the wall of the vaporizing chamber can be pressed over it thereby sealing it -



On the opposite side of flange is a recess for the purpose of utilizing the heat from the exhaust gases - If this exhaust enters the recess on the top, circulates around the wall of the vaporizing chamber and goes out at the bottom - To obtain a uniformity of heat on all parts of vaporizing chamber wall - I introduce a baffling plate - This consists of a small thin plate which fits over the inside wall with numerous small holes bored in it for three quarters of the way around.

The other quarter<sup>17</sup> is left blank and is brought directly opposite Exhaust inlet

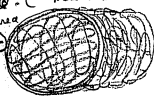


The idea of this is that at the inlet it is hottest ~~thinner~~ and this baffling gives two thicknesses of wall at that point - as the heat continues around it has access gradually through the holes to the inner tubes - these holes are drilled in less numbers in ~~inner~~ blank space and increased in the further away it gets from it -  
This baffling plate is very important for gasoline used light heat and unless it is fought off evenly from all sections of the wall it will

not be distributed <sup>(5)</sup> evenly through the chamber. (The Electrical side of flange this uniform distribution of heat is well taken care of -)

The same plate fits over this recess as the one used on elect side -

These plates have small holding rods which are used for the purpose of holding a wire core in properly chamber. This core consists of a specially constructed mass of <sup>very fine</sup> small iron wire - interwoven in such a manner that the mixture from the carburettor has to take a very tortuous passage through it the entire width of flange - This core is constructed so that <sup>about</sup> 50 per cent of the wire is touching the walls of this contact being sufficient to heat the rest of the wire. (This scheme increases the heating <sup>area</sup> a hundred fold.)

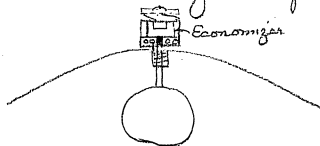


wire core -

5/14/11 HC

(6)  
This wire core breaks up the mixture so that it is quite impossible for raw gasoline to ever reach the cylinders -

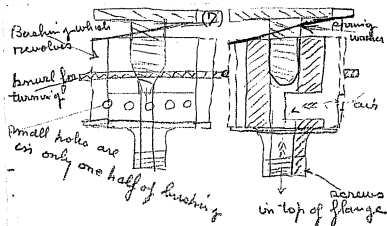
On the top of the flange <sup>in the center</sup> running down through the web which separates the two recesses - is a small hole ~~to~~ which is for the purpose of admitting air directly to the vaporizing chamber - This air adjustment is made in the following manner.



I call this an Economizer - for the more air your Engine will take in at this point the less gasoline will be used to develop the same power.

5/14/11 HC





By revolving the bushing you can obtain any amount of air through small holes -

Under separate cover I am sending small model of economizer so that you can see the idea -

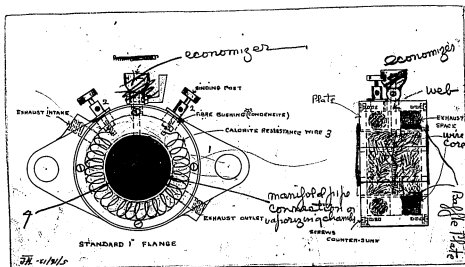
(5)

5/14/12 - H.C.

Either exhaust or hot water can be used - but exhaust is recommended for it causes immediate heat action.

Somewhere in the line of pipe (if exhaust is utilized) intake pipe - is placed a purifier - several of which now on the market will answer satisfactory - This attachment keeps the exhaust recess in flange clean.

I might mention that the Electric Heating attachment is used for the purpose of easy starting -



May 18, 1912.

Mr. Thomas A. Edison, Jr.,  
Burlington, N. J.

Dear Mr. Edison:-

The model of the economizer and the sketches  
and description of your new flange which you sent me a  
few days ago have been received. The matters mentioned  
in your letter will be taken up as promptly as possible

Yours very truly,

HL-JS

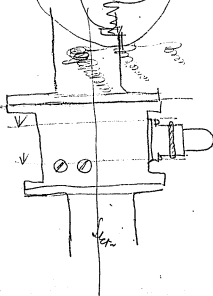
Welding for Patent Application

May 7<sup>th</sup> 1912

Explanatory to Mr. L. H.

7/12

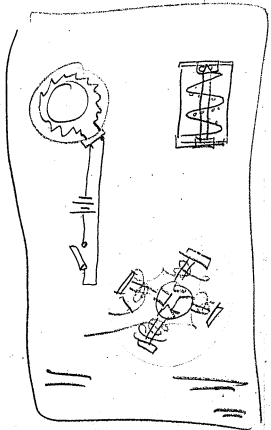
Modification



Modification

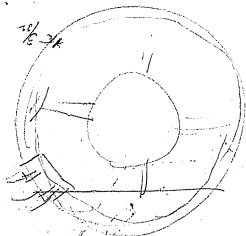
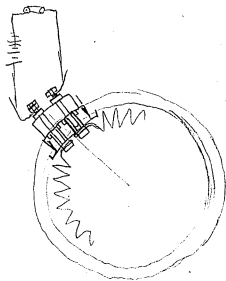


Spine

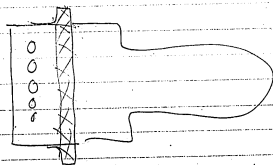
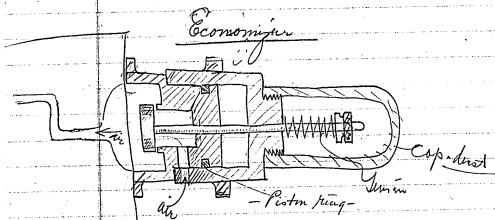


Form 57, 1-15-12, ehm.

THOMAS A. EDISON, Incorporated



[May 25]



W. B. H. H. H.  
Rust by H. B. H. H.

Burlington - N. H.  
June - 25<sup>th</sup> - 1912  
24

Dear Mr. Hamahan -

Thought I would

drop you a line and ask what you have done regarding the "Glange matter" - Am very anxious to go ahead with it and am about prepared to do so - But of course can do nothing until I know positively if there is no interference - Have tested the Glange thoroughly under every possible condition and it does better than I expected. I am quite sure that there will be a big demand for it especially now that the Gasoline we get around the country is of such a low test -

Let me hear from you as soon as possible Mr. Hamahan - as I am very anxious to know what you have done about it -

With very kind regards - I am

very faithfully yours

Thomas A. Edison

June 25, 1912.

Mr. Thomas A. Edison, Jr.,

Burlington, N. J.

Dear Mr. Edison:-

Your inquiry relating to the flange application has been received. The patent drawings for this application have been prepared and also a rough draft of the specification. I shall probably be able to send you the specification to be executed in about a week.

Yours very truly,

HL-JS



July 3, 1912.

Mr. Thomas A. Edison, Jr.,  
Burlington, N.J.

Dear Mr. Edison:-

I enclose herewith the drawings and specification in the application which has been prepared on your flange invention. Kindly read over the specification and if satisfactory, execute it in the following manner, signing your name "Thomas A. Edison, Jr." in each case:- Sign the petition in the place indicated. On the page containing the oath, sign at the top in the place indicated and fill in the date. Have this page signed by two witnesses in the places indicated. Sign the oath in the place indicated and have the same signed by a notary public, who should impress his seal upon the red sticker. Also be sure that the notary fills in the date in the oath. After the application has been executed, please return the drawings and specification to me to be filed.

If you wish any changes made, return the specification and drawings to me before executing the same, and advise me regarding the changes.

Yours very truly,

HL-JS  
Encs.

Burlington - N. J.  
July - 22<sup>nd</sup> 1912

Dear Mr. Hamahan -

I hope you will please

pardon the delay in not returning  
the Papers before this - but ever since  
the first of the month I have been ill  
in bed and consequently have had  
very little opportunity to look them over.

As far as I can see they cover the  
ground very thoroughly and very  
satisfactory to me in every way -

Am returning the drawings and  
Petition signed as requested -

Hope to be able to get up to Orange  
soon and will thank you personally  
for your interest in the matter.

Very faithfully yours  
Thomas A. Clough

Salisbury - Maryland

August - 27<sup>th</sup> - 1912

Dear Mr. Hamahan -

As I have spent

most of my summer ill in bed - I haven't had much of an opportunity to write you - I am anxious to know just where I stand concerning that little flange matter - what I most desire to know is - if I am at liberty to have a few of them made and put them on the market - It may be a long time before a patent is allowed me - In the meantime can't I go ahead and do something with it? Is it possible for me to procure a copy of the applications and sketches of the flange?

Any information you can give me on the subject will be very much appreciated - You can address me here at Salisbury - Md with very kind wishes - I am

Very faithfully  
Thomas O. Hamahan

~~Received~~  
~~Conf. Secy~~  
~~Edw. J. H.~~

Burlington - N. H.  
June - 7<sup>th</sup> - 1913

My dear Mr. Holdam -

I am sorry I did not have the opportunity of consulting you regarding the Patent end of my little Economizer - but I saw you were busy when I was in your office - and thought it best not to bother you about it!

I had a talk with Mr. Hamahan about it - and he informed me that it would be necessary for him to have an exact sample of the Economizer I intend to market - as as to determining whether I am infringing on anyone - I had several samples made but as they did not meet with my approval I returned them to the factory to be altered - I expect them completed this week - and will forward one to you immediately.

It is doubtful whether anyone really appreciated how very anxious I am to have this Economizer a complete

20 -  
Concern in the Examiner's letter, which we went over very carefully - he has allowed me the most important of all the claims made - and I feel confident that if the matter were pushed further I would be allowed more -

My greatest wish Mrs Holden is to give to Father that I can make a success if I have the opportunity and I will be very happy and Father greatly pleased - I am sure when this little Economizer is turning in to the Treasury honestly made dollars.

You will do me one of the greatest favors Mrs Holden - if you will go over the matter with Mrs Harbison! Who I understood has it in charge and advise me what best to do - If you find that I have to modify the Economizer somewhat to avoid infringement - I would like to know what changes are necessary as soon as possible so that I can advise my manufacturer accordingly -

With best wishes from us both and hoping you are enjoying good health - I am faithfully yours  
T. Edison

success in every way - In every test made the Economizer has proved its merit in fact it does much better than I claimed - and I am naturally very proud of it - This is very gratifying after three years of careful study and I want nothing whatever to mar its success - I am all prepared now to have it manufactured and marketed Mr Peter Weber is going to make them for me and I have arranged for the selling end - The name of Edison is not to be connected with it in any possible manner - I want its merit to sell it and nothing else - I have not as yet decided what name will best suit it - But this is a small matter that can be attended to later.

Now Mrs Holden - the only thing in this world that will hold us back is the Patent end - I understood that if we place "Patents Pending" on it we will have no protection whatever - and it will not stop anyone from going ahead and turning out the same article if they are fit to do

April 12, 1915

Mr. Thomas A. Edison, Jr.,  
Burlington, N. J.

Dear Mr. Edison:-

RE APPLICATION SERIAL NO. 711,398, FILED JULY 25,  
1912, FOLIO 872

I have prepared an amendment to be filed in this application and enclose herewith a copy of the same for your consideration. Mr. Gill recently handed me a circular advertising the Hartford Economizer put out by the Hartford Suspension Company. In the device illustrated in this circular, air is heated in a so-called stove in contact with the exhaust manifold and is then led through a pipe and discharged into the mixture just after the same leaves the carburetor. Mr. Gill apparently thinks that this is an infringement of your invention. I do not think there is any possibility of your obtaining claims in this application which would cover the Hartford Economizer, because it is old to introduce pre-heated air into the mixture after the same leaves the carburetor, as is shown by the patent to Stewart No. 1,036,344, patented December 3, 1912, application filed July 27, 1911. A copy of this patent is enclosed herewith. I am assuming that you cannot swear back of the patent to Stewart, that is to say, that you made your invention later than July 27, 1911, inasmuch as all the notes that I have relating to your invention are considerably later than this date. If I am wrong about this, please let me know.

(2)

I shall hold up this amendment for a time until I hear from you, as you may have some suggestions to make regarding it.

Very truly yours,

HL-JS

Encs.

Ch. T. A. Edison for April 19, 1915 -  
Under approval, Mr. Edison cannot  
over base of Stewart patent

June 24, 1915

Mr. Thomas A. Edison, Jr.,  
Burlington, N. J.

Dear Mr. Edison:-

Your application for Fuel Supplying Means was allowed June 23, 1915, and the final fee of \$20.00 must be received in the Office before December 23, 1915. This is the application that you discussed with me when you were here recently, and relates to a combined electric and fluid heater.

If you wish the patent issued, as I suppose you do, will you kindly arrange for the payment of the final fee.

Very truly yours,

HI-JS

*copy of this letter  
sent to R & T  
Oct 12, 1914  
JH*



October 1, 1915

Mr. Thomas A. Edison, Jr.,  
Burlington, N. J.

Dear Mr. Edison:-

I enclose herewith a copy of a letter which I sent you in June relating to your application for Fuel Supplying Means and notifying you that the case has been allowed and that the final fee of \$20.00 is due December 23, 1915. No doubt you have overlooked this matter, as I have not received any reply. Will you kindly acknowledge receipt of this letter.

Very truly yours,

HI-JS

Enc.

**Patent Series**

**Patent Application Files**

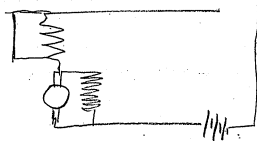
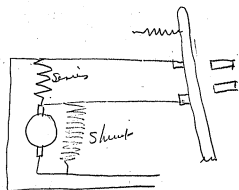
Folio # 876 Starting and Current-Supplying System for Automobiles

U.S. Patent #: 1255517

Primary Applicant: Edison, Thomas A

Date Executed: 7/27/1912





**Patent Series**

**Patent Application Files**

Folio # 879      Phonograph or Talking-Machine

U.S. Patent #:    1184334

Primary Applicant: Edison, Thomas A

Date Executed:    8/9/1912

June 12 1912

Recd  
June 14 1912  
S.B.

Legal Dept

G.H.  
6/17/12

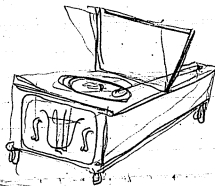
Look at the new steel  
Cabinet Small disc  
Machinics & see what  
are the salient  
features

Think the list

The drawing of the described  
from top of Motor to  
permit removal to swing  
The Steel Box details

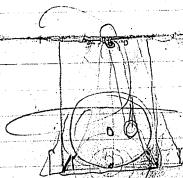
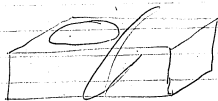
etc  
4544  
6/17/12  
Lester  
Lester

No 1



Mr. Salomon sketch.  
About Jan 9th  
1896

Ed. J. Anderson  
May 20, 1912  
D.C.

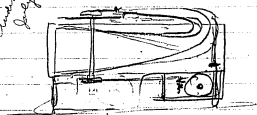


Handwritten notes and signatures at the bottom of the page, including the name "J.P. Wood" and a date "1/19".



No 2

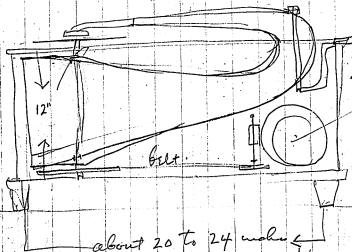
Back from  
Anderson.  
July 21, 1912  
P.B.



Mr. Shivers' sketch.  
About Jan 9<sup>th</sup> 12.  
J.H.

10" Records only

Rec'd from  
Anderson  
July 30, 1910  
J.P.R.



Victrol style  
Clockwork

Sticks 50

Mr. Edison  
Jan 9th 12

J.P.R.

about 20 to 24 inches

**Patent Series**  
**Patent Application Files**

Folio # 888      Phonographs or Talking Machines

Serial #:            719639

Primary Applicant: Edison, Thomas A

Date Executed:    8/21/1912

[PHOTOCOPY]

Folio No. 888

Serial No. 719,639

Applicant.

Address.

Thomas A. Edison

Mwcllynn Park,  
West Orange, N.J.

Photographs or

Title

Talking Machines

Filed

Sept. 10 - 1912

Examiner's Room No.

Assignee

Ass't Exec.

Recorded

Libr.

Page

Patent No. Wendover

Issued December 15, 1916

ACTIONS.

Amended Sept. 12 - 1912 16

Rejected Oct. 17 - 1912 17

Amended Sept. 22, 1913 18

Rejected Nov. 6 - 1913 19

Amended Oct. 29, 1914 20

Rejected Nov. 14 - 1914 21

Amended Sept. 26, 1915 22

Office Letter Sept. 24, 1915 23

Appeal to Examiner in Chief 24

Examiner's Answer - G. O. S. 1915 25

Date of Hearing of Nov. 20, 1915 26

Appellate Brief filed - Nov. 4, 1915 27

Decision of Examiner in Chief 7/6/16 28

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ABANDONED  
1918

VAULT

FRANK L. DYER,

Consult.

Orange, New Jersey.

"Sec. F 993"

# Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey.

prays that letters patent may be granted to him for the improvements in

*Phonographs or Halls*

- TALKING MACHINES -

set forth in the annexed specification; and he hereby appoints Frank L. Dyer  
(Registration No. 560), of Orange, New Jersey, his attorney, with full  
power of substitution and reboaction, to prosecute this application, to make  
alterations and amendments therein, to receive the patent, and to transact all  
business in the Patent Office connected therewith.

*Thos. A. Edison*

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements <sup>in Phonographs or Gramophones</sup> in TALKING MACHINES, of which the following is a description:

My invention relates <sup>to Phonographs or Gramophones</sup> to talking machines and more particularly to <sup>Phonographs or Gramophones</sup> talking machines employing records having record grooves of the up and down or hill and dale type. My object is to provide an improved arrangement or combination of elements whereby a faithful reproduction of the record undulations, especially those corresponding to the loud sounds and the delicate over-tones, can be obtained with machines of the class described. It has heretofore been impracticable to obtain such a faithful reproduction with phonographic apparatus, especially when a record having a record groove of a pitch of <sup>150 or more</sup> 150 or more threads per inch is employed, for the following reasons: With the ordinary wax-like and shellac-like compositions of which sound records have heretofore been extensively made, it has been impracticable, because of excessive wear on the record, to place sufficient weight on the reproducer stylus to cause the same to faithfully follow the undulations of large amplitude, the stylus being frequently, by reason of the insufficient pressure thereon, thrown completely off the record by such undulations and seldom reaching the bottom of the latter. Celluloid has been used as a sound record material having marked wear-resisting qualities, but best results cannot be obtained when a record of this material is used with a heavy

pressure on the stylus particularly where such pressure is confined to a record groove of a pitch of <sup>150</sup> ~~150~~ threads per inch or finer, as the celluloid is more or less yielding so that it gives or yields to a certain extent under the pressure of the reproducer stylus and the small undulations corresponding to the delicate over-tones are pressed out or flow away as the stylus passes over them without moving or vibrating the stylus, the said undulations springing back into their original form after the stylus has passed by. A faithful reproduction of the record is accordingly not obtained; and sweetness or beauty of tone is impossible if the record is to be loud.

I have experimented for a long time to find a suitable material for sound records having a record groove of a pitch of 150 or more threads per inch, which material will have sufficient hardness and resistance to wear to permit the use of a sufficient pressure on the stylus to prevent the latter from being thrown from the record undulations by the vibrations of large amplitude and at the same time having sufficient rigidity to be able to impart to the reproducer stylus sound vibrations corresponding to the delicate over-tones. Sound records made of metal have been suggested for this purpose, but those records when the width of the record groove is .0075 of an inch or less, wear out, <sup>very fast</sup> the reproducer stylus causing the metal to flow and smoothing down the over-tone undulations. After experiments extending over a long period, I have found a particular hard material, hereinafter more fully referred to, which has the desired qualities and properties above referred to without being subject to the objections found in metallic and other sound records heretofore used. <sup>known as 7444's</sup> The sound record composition referred to is the final hard <sup>material</sup>

infusible phenolic condensation products referred to in the applications, Serial Nos. 496,060, 543,258 and 604,982 of Jonas W. Aylsworth. Records may be made from this composition as disclosed in an application, Ser. No. 674,289 of said Aylsworth. Such records are hard, rigid, and have a smooth homogeneous surface free from air bubbles, dust particles and the like. By reason of the hardness of the said records, the weight pressing the stylus against the record undulations may be made sufficient to prevent the stylus from being thrown out of contact with the recorded undulations when the latter are of large amplitude. By reason of the rigidity of the said composition, the records formed therefrom are capable of accurately imparting to the reproducer stylus the undulations in the record groove corresponding to the delicate over-tones which give to music its quality. By reason of the surface excellence of the said records, wear on the reproducing stylus and surface noise in reproduction are practically entirely eliminated. As far as I am aware, it has never been practicable prior to the use of the above described material by me to employ in connection with a sound record of wear-resisting material and provided with a record groove of a pitch of 150 or more threads per inch, a reproducer stylus sufficiently weighted, as by a floating weight, to cause the same to accurately follow the record groove, both for the vibrations of large amplitude as well as for the minute vibrations corresponding to over-tones. When celluloid is employed as the sound record material and the record groove has a pitch of 100 or less threads per inch, the pressure on the stylus may be sufficient to cause the latter to be held in contact with all the record undulations and the over-tones to be reproduced, because the pressure per unit area is not great, but



when the record groove has a pitch of 150 or more threads per inch, the area which receives the pressure is greatly reduced and, as the pressure or weight must remain the same, *Insert A 11/11/12* it is requisite that the material of the record should be capable of withstanding the wearing effect of this pressure without any deformation of the record undulations. *11/11/12*

According to my invention in its preferred form, I employ a reproducer of the type having a floating weight carrying a stylus lever in which the stylus is mounted, the stylus lever being connected, at its end remote from that carrying said stylus, to the reproducer diaphragm. Such a reproducer may be and preferably is constructed as disclosed in my application, Serial No. 627,952 filed May 18, 1911, and entitled "Reproducers". The reproducer stylus is preferably constructed and formed as described in my application, Serial No. 551,128, filed March 23, 1910, or an application of Frank S. Traphagen, Serial No. 624,567, filed May 2, 1911, and entitled "Stylus Mountings". The record engaging end of the stylus is rounded on an arc having a diameter of about .008 of an inch and is preferably made of diamond. The floating weight for use with the above described stylus should be capable of exerting a pressure on the stylus of at least two and a half ounces, a pressure of four ounces being practicable and with a very loud record, essential, without objectionable wear on the record material employed when the record groove has a pitch of 150 or more threads per inch. *Insert B 11/11/12*

Having now described my invention, what I claim as new and desire to protect by Letters Patent of the United States is as follows:

*not less than  
sub 1.7*  
*Comb of Lec 12/29/44*  
1. The combination with a sound record of <sup>of a pitch of 1000000 threads per inch 7/24/43</sup> hard rigid material having a record groove <sup>all of the</sup> formed with vertical undulations therein, of a reproducer provided with a stylus and means for pressing said stylus against said undulations with sufficient pressure to force the stylus to follow accurately said undulations, the said record being subject to no appreciable wear under said pressure, substantially as described.

*not less than 0.0017*  
2. The combination with a sound record of hard rigid material having a record groove formed with vertical undulations therein, of a reproducer provided with a stylus, and means for pressing said stylus against said undulations with sufficient pressure to force the stylus to follow accurately said undulations, the said record and stylus being subject to no appreciable wear under said pressure, substantially as described.

*not less than 0.0017*  
3. The combination with a sound record of hard rigid material having a record groove formed with vertical undulations, of a reproducer provided with a stylus having a record engaging portion rounded on an arc having a diameter of substantially .008 inches, and means for pressing said stylus against said undulations with a pressure no less than two and a half ounces, the said record being subject to no appreciable wear under said pressure, substantially as described.

4. The combination with a sound record of hard rigid material having a record groove formed with vertical undulations, of a reproducer provided with a stylus having a record engaging portion rounded on an arc having a diameter of substantially .008 inches, and a floating weight for pressing said stylus against said undulations

*from record 9/24/19*  
with a pressure no less than two and a half ounces, the  
said record being subject to no appreciable wear under <sup>or deformation</sup> 9/24/19  
said pressure, substantially as described.

5. The combination with a sound record of a hard infusible phenolic condensation product having a record groove formed with vertical undulations therein, of a reproducer provided with a diamond stylus, and means for pressing said stylus against said undulations with sufficient pressure to force the stylus to follow accurately said undulations; the said record being subject to no appreciable wear under said pressure, substantially as described.

*hard rigid material 9/24/19*  
6. The combination with a sound record of hard rigid material having a record groove formed with vertical undulations therein, of a reproducer provided with a stylus, and means for pressing said stylus against said undulations with sufficient pressure to force the stylus to follow accurately said undulations, the said record being subject to no appreciable wear under said pressure, and being sufficiently rigid to cause the stylus to be moved by the undulations corresponding to overtones without a deformation of the record material, substantially as described.

7. The combination with a sound record of hard rigid material having a record groove not greater than .0075 of an inch in width and formed with vertical undulations therein, of a reproducer provided with a stylus, and means for pressing said stylus against said undulations with sufficient pressure to force the stylus to follow accurately said undulations, the said record

*revised 10/9/18*  
being subject to no appreciable wear <sup>or deformation 10/10/18</sup> under said pressure, substantially as described.

8. The combination with a sound record of hard rigid material having a record groove not greater than .0075 of an inch in width and formed with vertical undulations, of a reproducer provided with a stylus having a record engaging portion rounded on an arc having a diameter of substantially .008 inches, and means for pressing said stylus against said undulations with a pressure no less than two and a half ounces, the said record being subject to no appreciable wear <sup>or deformation 9/24/18</sup> under said pressure, substantially as described.

9. The combination with a sound record of a hard infusible phenolic condensation product having a record groove not greater than .0075 of an inch in width and formed with vertical undulations therein, of a reproducer provided with a diamond stylus, and means for pressing said stylus against said undulations with sufficient pressure to force the stylus to follow accurately said undulations, the said record being subject to no appreciable wear <sup>or deformation 11/24/18</sup> under said pressure, substantially as described.

10. The combination with a sound record of hard rigid material having a record groove not greater than .0075 of an inch in width and formed with vertical undulations therein, of a reproducer provided with a stylus, and means for pressing said stylus against said undulations with sufficient pressure to force the stylus to follow accurately said undulations, the said record being subject to no appreciable wear under said pressure, and being sufficiently rigid to cause the stylus to be moved by the

undulations corresponding to overtones without a deformation  
of the record material, substantially as described.

*Invent B. Claims 11 and 12 7/2/13*  
*Invent B. Claims 1-4 sec. 11-11/14*

This specification signed and witnessed this 21<sup>st</sup> day of August 1912

Thos. A. Edison

Witnesseth:

1. Frederick Bachmann
2. Anna R. Klehm

## Oath.

State of New Jersey }  
County of Essex } ss.,

THOMAS A. EDISON, the above named  
petitioner, being duly sworn, deposes and says that he is a citizen of the United  
States, and a resident of West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the  
improvements in TALKING MACHINES

described and claimed in the annexed specification; that he does not know and  
does not believe that the same was ever known or used before his invention or  
discovery thereof; or patented or described in any printed publication in the  
United States of America or any foreign country before his invention or  
discovery thereof, or more than two years prior to this application; or patented  
in any country foreign to the United States on an application filed more than  
twelve months prior to this application; or in public use or on sale in the  
United States for more than two years prior to this application; and that no  
application for patent upon said invention has been filed by him or his legal  
representatives or assigns in any foreign country.

Thos. A. Edison

Sworn to and subscribed before me this 21<sup>st</sup> day of August 1912

Anna R. Klehm

[Seal]

Notary Public.

NOTARY PUBLIC STATE OF NEW JERSEY  
COMMISSION EXPIRES JUNE, 1915

U. S. I.

2-161

ADDRESS ONLY  
THE COMMISSIONER OF PATENTS,  
WASHINGTON, D. C.

SERIES OF 1900.

No. 719,639

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

Washington, D. C., Sept 10, 1912

Sir:

I have to acknowledge the receipt of the petition, specification, oath, and  
drawing of your application for patent for

Talking Machine

with FIFTEEN DOLLARS as the first fee payable thereon.

Your application will be considered in its order, and you will be duly  
advised as to the examination thereof.

Very respectfully,

E. B. Moore.

Commissioner of Patents.

Thomas A. Baird

Frank L. Dyer

Orange, N. J.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

16- If payment is made by check or draft, the credit granted is subject to the collection of the same.

COPY

Department of the Interior  
United States Patent Office  
Washington.

August 26, 1912

Sir:

I have to acknowledge the receipt of your incomplete application for patent, the title of which is improvement in Talking Machines, filed August 23, 1912, accompanied by

Petition,  
Affidavit,  
Specification,  
~~Examination~~  
Fee of \$15.

This application is informal for the reason that a drawing is required, such requirement having been made by the Examiner.

Very respectfully,

E. B. Moore,

Commissioner of Patents

T. A. Edison

Frank L. Dyer,

Orange,

New Jersey

This informal application must be completed within one year from the filing date above mentioned.

Deliverance of the Invention

Original of this paper sent down to Mr.  
Eckert as receipt for \$15.



IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
TALKING MACHINES, ) Room No. 379  
Filed September 10, 1912, )  
Serial No. 719,639. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In the eighth line from the bottom of page 2 after "out" insert a comma (,) - .

Cancel the matter beginning with "it" in line 4, page 4 and ending with "ulations" in line 7, same page, and insert in place thereof the following: - the pressure per unit area is so increased that there is a deformation of the record undulations in the celluloid by the reproducer stylus - .

After the paragraph ending in the fourth line from the bottom of page 4 insert the following:

- In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawing forming a part of this specification and in which the figure illustrates a side elevation of one embodiment of my invention.

In the drawing the numeral 1 designates a reproducer of the type disclosed in my application, Serial No. 627,952 above referred to, this reproducer being supported by the sound conveying arm 2 leading to an amplifying horn, (not shown). The reproducer 1 is provided with an extension 3 from the outer extremity of which a floating weight 4 is supported by a connection comprising a spring 5 so-

B  
continued.

cured to the weight 4 and to a stud 6 supported by the extension 3. The stylus lever 7 is pivotally supported on the under side of the floating weight and is provided with a reproducer stylus 8 adapted to track the record groove of a record tablet 9 supported on a rotatable turntable 10 - .

Respectfully submitted,

THOMAS A. EDISON,

By Wm. L. Dyer  
his Attorney.

Orange, New Jersey.

September 7, 1912.

Paper No. 3, Ref. ....  
All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Oct. 17, 1912.

Thomas A. Edison,  
Care Frank L. Dyer,  
Orange, New Jersey.

U. S. PATENT OFFICE,  
OCT 17 1912  
MAILED.

Please find below a communication from the EXAMINER in charge of your application.

for Talking Machines, filed Sept. 10, 1912, serial number 719,639.

6-201

E. B. Moore.

Commissioner of Police.

The amendment of Sept. 13, 1912, has been entered and considered.

In the amendment at the bottom of page 4, line 13, "and to" should be by means of .

All of the claims are rejected as aggregations of an admittedly old record tablet and an admittedly old reproducer. There is no invention involved in alone increasing the size of the weight to a point desired. see Mobley, Dec. 31, 1901, #890,069 (181-10); also see the size of weight disclosed by Leeds English patent, June 20, 1901, #12,060, (161-10). Nor is invention found in the selection of the specific pitch of 150 threads to the inch as such pitch is well known in this art, as see Tainter, July 10, 1886, #385,886. (141-5).

Vol. 88

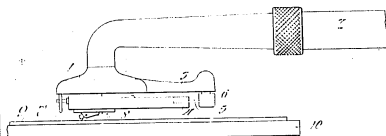
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Div 23

117  
7

See Pat. 781 - Adams Mfg.



**Witnesses:**

*Edwin S. Adams*  
*Frederick Bachmann*

**Inventor:**

*Thomas A. Edison*  
*By Frank T. Kim*  
*his Atty.*

RECEIVED

FEB 6 1913



ANS.

C. H. WILSON.

FEB 5 1913

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
TALKING MACHINES, )  
Filed September 10, 1912, ) Room No. 379.  
Serial No. 719,639. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of  
October 17, 1912, please amend the above entitled case as  
follows:

In the last line on page 2, after "is"  
insert - formed of - , and change "hard" to - harness - .

In line 2, claim 1, after "groove" insert  
- of a pitch of 150 or more threads per inch - ; and in  
line 7, same claim, after "wear" insert - or deformation - .

In line 2, claim 2, after "groove" insert  
- of a pitch of 150 or more threads per inch - .

In line 8, claim 3, after "wear" insert  
- or deformation - .

In line 8, claim 4, after "wear" insert  
- or deformation - .

In line 2, claim 6, after "groove" insert  
- of a pitch of 150 or more threads per inch - .

In line 8, claim 7, after "wear" insert  
- or deformation - .

In line 9, claim 8, after "wear" insert  
- or deformation - .

In line 9, claim 9, after "wear" insert  
- or deformation - .

Add the following claims:

51. The combination with a sound record containing a final hardened phenolic condensation product and having a record groove of a pitch of ~~150 or more~~ <sup>120 or more</sup> threads per inch formed with vertical record undulations, of a reproducer <sup>sound reproducing means comprising</sup> ~~provided with a~~ stylus, and means for pressing said stylus against said undulations with a pressure no less than two and a half ounces, substantially as described.

52. The combination with a sound record containing a final hardened phenolic condensation product and having a record groove of a pitch of ~~150 or more~~ <sup>120 or more</sup> threads per inch formed with vertical record undulations, of a reproducer <sup>sound reproducing means comprising a diamond</sup> ~~provided with a diamond~~ stylus, and means for pressing said stylus against said undulations with a pressure no less than two and a half ounces, substantially as described.

#### REMARKS

The change suggested by the Examiner in the second paragraph of the last Office action is not understood as the spring 5 is not secured to the weight 4 by means of stud 6.

Referring to the rejection of the claims by the Examiner "as aggregations of an admittedly old record tablet and an admittedly old reproducer", it is pointed out that applicant has not admitted either the reproducer or the record tablet as described in the claims to be old. As to the reproducer, the degree of pressure of the stylus against the record undulations referred to in the claims herein is not disclosed in applicant's prior application referred to in the specification of this case. The general type of reproducer disclosed in said application is referred to in this application only for convenience of illustration, and applicant's invention as

herein claimed is obviously capable of embodiment with various other types of reproducer. As to the record tablet, the claims call for more than the composition disclosed in the Aylsworth applications in that they specify "a sound record" and describe the character of the record grooves.

The Examiner takes the position that "There is no invention involved in alone increasing the size of the weight to a point desired", the patents to Mobley and Leeds being cited in support of this position. The patent to Mobley does not contain a definite description of any means capable of producing the degree of pressure specified in applicant's claims between the stylus and the record undulations. Mobley's floating weight may, as far as can be ascertained from his specification, place a pressure of no more than a fraction of an ounce on the stylus. Of course, the Examiner is well aware that an indefinite disclosure is not an anticipation of a claim. The patent to Leeds specifically states that the device therein disclosed causes the reproducer point to "rest lightly upon the sound record." (See page 1, line 17, and page 2, lines 25 to 28 and 43 to 49 of Leeds' specification).

The various elements of applicant's claims are, therefore, not fully disclosed in the prior art, and the only other question to be considered is whether or not the claims as drawn cover unpatentable aggregations. The difficulty prior to applicant's invention of employing a heavy pressure on the reproducer stylus is indicated in lines 13 to 15, page 2 of the patent to Leeds cited by the Examiner, in which lines Leeds states as follows: "And increase in the weight of the plate C in order to



overcome this difficulty causes the reproducing point D to bear so heavily upon the sound record as rapidly to wear the record away and destroy it". Where, with the records in the prior art, the composition did not wear away with the heavy pressure on the stylus, the records became deformed during reproduction by the pressure of the stylus and the reproduction was imperfect. Applicant conceived what was necessary to obtain a perfect reproduction where the number of threads on the record was large; he conceived that the stylus must bear on the record with a certain degree of pressure and that a record composition must be found which was subject to no applicable wear or deformation under this pressure. He conducted experiments for years to obtain the desired combination of reproducer and composition, but did not get the perfect combination until he used the improved hard composition referred to in the specification, together with a reproducer placing considerable pressure on the stylus. He then made records of this composition and a reproducer specially designed to co-operate therewith, and by the combination of these two, there was obtained for the first time the desired acoustic and commercial result. He made an improved combination and, as it is a well understood principle of the patent laws that a new combination of elements producing an improved result is patentable, it is thought that the claims should be allowed. The Examiner is accordingly requested to reconsider his rejection and to allow all of the claims including the new claims, which are thought to be patentable and necessary to fully protect the applicant in his invention.

Respectfully submitted,  
THOMAS A. EDISON.

By Frank L. Dyer  
his Attorney.

Orange, New Jersey  
September 22 1913.  
FB

Div. 25 Room 379  
Address only  
"The Commissioner of Patents,  
Washington, D.C."  
J.H.E.-But.

2-260

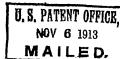
Paper No. 3, Letter  
All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Nov. 6, 1913.

Frank L. Dyer,

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

THOMAS A. WILSON, serial number 712,552, filed Sept. 10, 1912, for

Talking Machines.

*J. E. Sullivan*  
Commissioner of Patents.

U.S.-3011

This action is responsive to the amendment filed Sept. 23,

1913.

Last line of page 2, "hardness" should be "hard".

Each of claims 1 to 10 inclusive are objectionable in the clause relating to the lack of wear or deformation, such being but a result to be accomplished and not a limitation on the structure claimed. Moreover, it is perfectly well known that if a reduction of wear is desired there should be a selection of the material of the bearing surfaces of a similar degree of hardness. See Jones, April 15, 1913, 1,038,754, (181-11). *See also Jones, but same means, but in other way.*

Applicant is admittedly not the inventor of a record tablet made of the composition employed. The pitch of the record thread employed is held patentably immaterial, being a matter of selection, and the use of a variety of pitches being well known in this art. Taintor, of record, shows the number described by applicant, to wit, 150 to the inch. Applicant is also admittedly *not* the inventor of the stylus employed. The use of a heavy weight is disclosed by Leeds of record, the dimensions given equalling or exceeding those employed by applicant. The advantages arising from increasing the weight is clearly disclosed in Leeds, Mobley of record or Russell, Sept. 3, 1901, 681,981, (181-10). No invention then

719,636-----2.

is found in increasing the weight in Edison, March 11, 1913,  
1, 055, 621, (181-10), for this same purpose. It is not seen that  
applicant has done more than add together old structures obtain-  
ing but the sum of their respective functions and advantages.  
Accordingly all of the claims are rejected. See also Carter, Dec.  
17, 1912, 1, 047, 497, (181-10).

Claims 1, 2, 6, 11 and 12 are objectionable as alternative in  
the expression, "150 or more threads".

make  
not less than 150 threads

See 1, 047, 497  
which has more

objectionable  
as alternative  
in the expression

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
TALKING MACHINES, ) Room No. 379  
Filed September 10, 1912, )  
Serial No. 719,639. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of November 6, 1913, please amend the above entitled case as follows:

In line 17, page 1, after "of" second occurrence, insert - "substantially" - .

In line 2, page 2, after "of" second occurrence, insert - "substantially" - ; in line 15, same page, after "pitch of" insert - "substantially" - ; and in the last line, same page, change "hardness" to - "hardened" - .

In line 23, page 3, after "or" insert - "substantially" - ; and after the sentence ending in line 27, page 3, insert the following sentence: - This result is accomplished by the present invention - .

In the 5th line from the bottom of page 4 after "of" insert - "substantially" - .

Cancel claims 1 to 10, inclusive and insert the following as claims 1 to 4 inclusive:

1. The combination with a sound record of hard rigid material having a vertically undulating record groove of a pitch of <sup>and between 150</sup> ~~substantially 150 or more~~ threads per inch, of sound reproducing means comprising a reproducer stylus

of hard material having a rounded record engaging portion, and means for pressing said stylus against said record with sufficient pressure to force the stylus to follow accurately all of the undulations of said groove, the said record being substantially more rigid than celluloid and having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.

2. The combination with a sound record of hard rigid material having a vertically undulating record groove not greater than .0075 of an inch in width, of sound reproducing means comprising a reproducer stylus of hard material having a rounded record engaging portion, and means for pressing said stylus against said record with a pressure no less than 2 1/2 ounces, the said record being substantially more rigid than celluloid and having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.

3. The combination with a sound record containing a hardened phenolic condensation product having a vertically undulating record groove not greater than .0075 of an inch in width, of sound reproducing means comprising a reproducer stylus of hard material having a rounded record engaging portion, and means for pressing said stylus against said record with a pressure no less than 2 1/2 ounces, the said record having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.

4. The combination with a sound record containing a hardened phenolic condensation product having a vertically

C  
undulating record groove not greater than .0075 of an inch in width, of sound reproducing means comprising a diamond reproducer stylus having a rounded record engaging portion, and means for pressing said stylus against said record with a pressure no less than 2 1/2 ounces, the said record having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.

In line 3, claim 11, after "pitch of" insert - substantially -; in line 4, same claim, after "of" insert - sound reproducing means comprising - ; and in line 5, same claim, cancel "provided with a" .

In line 3, claim 12, after "pitch of" insert - substantially -; in line 4, same claim, change "a" to - sound reproducing means comprising a diamond - ; and in line 5, same claim, cancel "provided with a diamond".

Change the numerals of claims 11 and 12 to 5 and 6 respectively.

#### REMARKS

The claims have been revised to more clearly and accurately define applicant's invention. The expression "substantially 150 or more threads" in present claims 1, 5 and 6 is thought not to be objectionable as alternative. This expression as used in the said claims morely means threads to a number not less than substantially 150 and the meaning is not alternative.

It is thought that the patentability of the invention claimed will be appreciated if the improved results obtained by the invention and the large amount of experimentation done by applicant to perfect the invention are considered. The invention claimed is embodied in all of the

new disc phonographs and records put out by Thomas A. Edison, Incorporated. These phonographs and records are universally considered, by those who have heard them, to mark a wonderful advance in the art of sound reproduction, and their superiority and success is evidenced by the enormous and increasing sales thereof. If the Examiner has not already heard one of these machines he may obtain a fair demonstration of the same at the store of one of the Washington dealers of the Edison Company. The superiority of these machines is due largely to the employment of the combination claimed in this application; and it is thought that the Examiner must admit that as a practical matter the production of this combination could not be considered obvious when in spite of the improvement produced thereby it was never conceived by anyone prior to applicant and when the latter, with a thorough knowledge of the art, spent months and even years in perfecting the same.

The patents to Mobley, Russell, Carter and Leeds do not suggest the use of a definite pressure on the reproducer stylus. How high a pressure they contemplated, it is impossible to ascertain from their patents. As to the patent to Leeds to which the Examiner refers particularly, it is thought that the Examiner fails to note that Leeds' object was to cause the reproducer point to "rest lightly upon the sound record" (see page 1, line 17, and page 2, lines 25 to 28, lines 43 to 49 and lines 53 to 56 of Leeds' specification.). The weights shown by Leeds are so arranged as to act as counterbalances removing the pressure from and not adding the same to the stylus. But even if Mobley, Russell, Carter and Leeds had conceived the advantages arising from increasing the weight on the stylus, they could not, as a practical matter, have produced the

improved results obtained by applicant, as they did not have the specific combination of reproducing means and record by which alone these results can be obtained. Supposing Mobley had attempted to use with one of the wax or celluloid records of the prior art, a pressure on the stylus such as that contemplated by applicant, the records would have been so worn and deformed as to be entirely impracticable. As to the connection of Ayleworth with the specific composition employed by applicant, the Examiner is again requested to bear in mind that the improved results of the invention are due to a conjoint action of the combined elements and not to the separate effect or effects of any one or more elements. The action of one part modifies and affects the action of the other parts; and under well established principles of the patent law, even if the separate elements of the combination were old, which is not admitted by applicant, their combination, being new and producing improved results in a marked and generally recognized degree, is patentable. (See *Kryptok Co. v. Stead Lens Co.*, 207 F. 85, 93; *National Hollow Brake Beam Co. vs. Interchangeable Brake Beam Co.*, 106 F. 692; 45 C.C.A. 544; *Parsons et al. v. Minneapolis Threshing Mach. Co.*, 106 F. 941; *Consolidated Rubber Tire Co. et al v. Finley Rubber Tire Co. et al.*; *Finley Tire Co. et al v. Consolidated Rubber Tire Co. et al.*, 116 F. 629; *Lowrie v. H.A. Mel drum Co.*, 124 F. 761; and *E.H. Freeman Electric Co. v. Johns-Pratt Co.* 204 F. 288.).

As to the statement of the Examiner that "it is perfectly well known that if a reduction of wear is desired there should be a selection of the material of the bearing surfaces of a similar degree of hardness", it is pointed out, first, that applicant's object was not the mere re-



duction of wear, but primarily the obtaining of true phonographic reproduction; and, second, that mere selection of bearing surfaces of an even degree of hardness does not eliminate wear but merely makes the wear the same for both bearing surfaces. The improved acoustic and wear resisting qualities of applicants combination are not obtained by anything disclosed in the Jones patent referred to by the Examiner, and applicant's improved combination is not even remotely suggested by Jones.

Applicant's invention is novel and marks a big advance in the phonographic art, and that it was not obvious is evidenced by the failure of any prior inventor to produce the same in spite of its value and commercial success. The claims are all thought to be patentable and reconsideration and allowance are accordingly respectfully requested.

Respectfully submitted,

THOMAS A. EDISON.

By Frank L. Dyer  
his attorney.

Orange, New Jersey,

October 29, 1914.

4B/RGR

DIV. 23, Room 379

Subsidiary  
"The Commissioner of Patents,  
Washington, D. C.,  
and not any official by name.

2-200

Paper No. 8

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

102-Su

WASHINGTON

Nov. 14, 1914.

Frank L. Dyer,

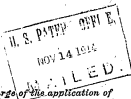
Orange,

N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Talking Machines, filed Sept. 10, 1912;

Serial No. 719,639.



*Thomas Ewing*  
Commissioner of Patents.

40-2041

In response to amendment of Oct. 30, 1914.

Page 1, line 17; page 2, lines 2 and 15; page 3, line 23; page 4, line 28; and claims 1, 5 and 6, line 3; "substantially 150 or more" is objectionable, as the "substantially" is inconsistent with the "or more", or else tautological. Furthermore, the "or more" is either objectionable as rendering the claims alternative in form, or else it is objectionable as surplusage. Ex parte Phillips, 135 O. G., 1801.

All of the claims are rejected on the references and reasons fully set forth in the last office action. It can not be seen that applicant has done more than assemble features of which he is not the inventor admittedly, or features old in the art, in an old combination, without change of function of either the combination or the particular elements, and without other result than the obvious advantages arising from the individual employment of these features collocated in a single machine. *Hailes v. Warner*, 20. Wallace, 353, is believed to be squarely in point.

The hardness and rigidity of the material results in durability, but would have such result whatever kind of reproducer it was employed with. In other words, applicant's material adds the same result in applicant's device as it did in the use contemplated by him when he made sound records thereof, or as it would in any sound repre-

ducing machine in the art. Applicant has therefore only brought to the assembly a material of which he is admittedly not the inventor to perform its obvious and old function in its old way. Moreover, the definition of material in claims 1 and 2 is no more than that of the ordinary shellac composition in common use. The statement of the last three lines of claims 1, 2, 3 and 4 can not be held to add patentability to the claims, for it is a statement of a result to be obtained, not of means to accomplish a result. Obviously, a result is not patentable, but only the means for accomplishing it.

The pitch, width and conformation of the groove is also old in the art, as in Tainter, of record. Such is not seen to have any material relation whatever to the substance employed in the tablet. Nor is any cooperative function found between the nature of the groove and the kind of reproducer employed other than that existing in Tainter's machine. The pitch, size and conformation of applicant's groove cooperate with his reproducer precisely as Tainter's groove did with his reproducer. Applicant, therefore, has again brought an old element to an old combination to operate in its old way only.

The stylus employed by applicant is admittedly not his invention. Moreover, so far as claims 1, 2, 3 and 5 specify the stylus may be the conventional sapphire stylus, the rounded end being the usual and conventional structure. It is not seen that it operates in any different way, has any different function, produces any different result or creates any different advantage, as used by applicant, than as used in any prior machine. Furthermore, the selection of a hard material, if a soft material would wear away quickly, is no more than any one in the art would do. The use of a harder stylus material flowed naturally from the use of Lyleworth's harder record material.

The selection of a particular and desired heaviness of floating weight is not seen to be more than has been common in the art, as in references of record, as Mobley or Russell. Any difference in result arising from applicant's heavy reproducer is a difference in degree, and

not in kind. The result to be obtained from increased weight is well recognized in the art, as in the references cited. The size of weight is a matter of selection, and that a heavier weight could be used with harder material is self evident. Applicant will hardly contend that everybody who adds an ounce of weight to the reproducer without a difference in kind is entitled to a patent. Furthermore, the limitation in claim 1, lines 7 and 8, can not be given any weight, because it specifies but a result to be accomplished and is true, to a greater or less extent, of every reproducer in the art. So far as concerns Leads, of record, the use of the weights to increase the stylus pressure is but a double use of that device. *National Hollow Brake Beam Co. v. Interchangeable Brake Beam Co.*, 106 Fed., 693.

For these reasons, amplifying the same as set out of record, it is not seen that applicant has done more than aggregate prior features without novel cooperative function.

As nothing of patentable subject matter can be seen in this application, and as a clear issue has been reached between applicant and the examiner as to the patentability of the subject matter of the present claims, further prosecution before the examiner would seem to be to no purpose, and the claims are finally rejected. *Ex parte Miller*, 150 O. C., 827.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

TALKING MACHINES

Filed September 10, 1912

Room No. 379

Serial No. 719,639

HONORABLE COMMISSIONER OF PATENTS.

S I R :

Please amend the above entitled case as follows:-

Change the title of the invention to - PHONOGRAPHS  
OR TALKING MACHINES - .

Page 1, line 6, after "in" insert - PHONOGRAPHS  
OR - . Line 7, after "to" insert - phonographs or - .  
Line 8, after "to" insert - phonographs or - .

Page 1, line 17; page 2, lines 2 and 15; page 3,  
line 23; page 4, line 28, cancel "substantially".

Claim 1, line 3, change "substantially 150 or  
more" to - not less than 150 - .

Claim 5, line 3, change "substantially 150 or  
more" to - not less than 150 - .

Claim 6, line 3, change "substantially 150 or  
more" to - not less than 150 - .

R E M A R K S

The above amendments are made to put this appli-  
cation in better form for consideration on appeal.

Respectfully submitted,

THOMAS A. EDISON

Orange, N. J.

By

*Francis L. Dyer*

September 21, 1915

His Attorney

FB-JB

Div. 22 Room 279

Address only  
"The Commissioner of Patents,  
Washington, D. C.,  
and not my official by name.

2-200

CCP

Paper No. 9 888

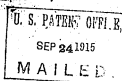
All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Sept. 24, 1915.

Frank L. Dyer,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 719,639, Filed Sept. 10, 1912,

for "Talking Machines."

Thomas Ewing  
Commissioner of Patents

6-5351

The amendment of Sept. 22, 1915, is admitted under  
the provisions of Rule 68. Such admission does not extend  
the statutory period within which to take complete action  
in response to the final rejection of Nov. 14, 1914.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHS OR TALKING MACHINES

Room No. 379.

Filed September 10, 1912

Serial No. 719,629

HONORABLE COMMISSIONER OF PATENTS,

S I R :

I hereby appeal to the Examiners-in-Chief from the decision of the Principal Examiner in the matter of my above entitled application, which, on the 14th day of November, 1914 was rejected for the second time. The following are the points of the decision on which the appeal is taken:-

The Examiner erred in rejecting the claims of the application and each of them.

The Examiner erred in not allowing the claims of the application and each of them.

The Examiner erred in holding the claims and each of them to be without patentable novelty.

An oral hearing is requested.

Signed at West Orange, Essex County, New Jersey,  
this 27 day of September, 1915.

THOMAS A. EDISON

By

*Frank L. Dyer*

His Attorney

September 27, 1915.

THOMAS A. EDISON  
PHONOGRAPHS OR TALKING MACHINES  
Filed September 10, 1912  
Serial No. 719,639

HONORABLE COMMISSIONER OF PATENTS.

S I R :

Enclosed herewith find appeal in the above entitled case,  
also check for \$10. to cover appeal fee.

Respectfully,

THOMAS A. EDISON

By \_\_\_\_\_

His Attorney

ENCLS.

PB/JU



Addressed to  
The Commissioner of Patents,  
Washington, D. C.

DEPARTMENT OF THE INTERIOR,  
UNITED STATES PATENT OFFICE.

Washington, D. C.,

*Sept. 28*, 1915.

Sir:

I have to acknowledge the receipt of the APPEAL to the

*Commissioner-in-Chief*

in your application for Improvement in

*Chronographic or Talking*  
*machines*,

with *10* Dollars as the fee payable thereon.

Of the result due advice will be given.

Very respectfully,

*Thomas Ewing*

Commissioner of Patents.

*Thos. A. Edison.*

*Wm. Frank L. Dyer.*

See if payment is by check or draft, the acknowledgment is subject to the retention of the patent.

In the United States Patent Office.

In re application No. 719,639, )

Thomas A. Edison, )

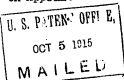
Filed Sept. 10, 1912, )

Talking Machines. )

Before the Honorable Board of  
Examiners-in-Chief.

On Appeal.

-----  
Examiner's Answer.  
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This is an appeal to the Board of Examiners-in-Chief

from the final rejection of the following claims:

1. The combination with a sound record of hard rigid material having a vertically undulating record groove of a pitch of not less than 150 threads per inch, of sound reproducing means comprising a reproducer stylus of hard material having a rounded record engaging portion, and means for pressing said stylus against said record with sufficient pressure to force the stylus to follow accurately all of the undulations of said groove, the said record being substantially more rigid than celluloid and having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.
2. The combination with a sound record of hard rigid material having a vertically undulating record groove not greater than .0075 of an inch in width, of sound reproducing means comprising a reproducer stylus of hard material having a rounded record engaging portion, and means for pressing said stylus against said record with a pressure of no less than 2 1/2 ounces, the said record being substantially more rigid than celluloid and having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.
3. The combination with a sound record containing a hardened phenolic condensation product having a vertically undulating record groove not greater than .0075 of an inch in width, of sound reproducing means comprising a reproducer stylus of hard material having a rounded record engaging portion, and means for pressing said stylus against said record with a pressure no less than 2 1/2 ounces, the said record having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.
4. The combination with a sound record containing a hardened phenolic condensation product having a vertically undulating record groove not greater than .0075 of an inch in width, of sound reproducing means comprising a diamond reproducer stylus having a rounded record engaging portion, and means for pressing said stylus against said record with

a pressure no less than  $2\frac{1}{2}$  ounces, the said record having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.

5. The combination with a sound record containing a final hardened phenolic condensation product and having a record groove of a pitch of not less than 150 threads per inch formed with vertical record undulations, of sound reproducing means comprising a reproducer stylus, and means for pressing said stylus against said undulations with a pressure no less than two and a half ounces, substantially as described.

6. The combination with a sound record containing a final hardened phenolic condensation product and having a record groove of a pitch of not less than 150 threads per inch formed with vertical record undulations, of sound reproducing means comprising a diamond reproducer stylus, and means for pressing said stylus against said undulations with a pressure no less than two and a half ounces, substantially as described.

The references relied on are:

Tainter,	385,886,	July 10, 1888,	181-5;
Russell,	681,981,	Sept. 3, 1901,	181-10;
Mobley,	690,069,	Dec. 31, 1901,	181-10;
Cantor,	1,047,497,	Dec. 17, 1912,	181-10;
Leeds, British,	12,560,	June 20, 1901,	181-10.

The disclosure of this application relates to sound reproducing mechanism, and the claimed combination comprises a record tablet of hard wear-resisting material, i.e., of "final hardened infusible phenolic condensation products", having a vertically undulatory record groove of a pitch of 150 threads to the inch, and a reproducer of the floating weight type, the weight being of  $2\frac{1}{2}$  ounces or more, and carrying a stylus lever and stylus, the latter having the usual rounded record-engaging end, and being preferably of diamond. By the use of this record material the record will wear longer, and, owing to its rigidity enable a greater pressure to be applied thereto through the reproducing stylus. This rigidity is of especial importance where the record groove is of fine pitch, and therefore the bearing area of the stylus point small, as the pressure per unit area is then proportionately increased. By the use of a heavy floating weight, a more intimate engage-

ment of the stylus and record is maintained with a more accurate reproduction resulting. Applicant's stylus is of conventional shape, and the hard material used is necessitated by the hardness of the record material.

The general combination of record and reproducer is, of course, common to all sound reproducing machines, as in the disk graphophone of Tainter, cited. It is the position of the examiner that applicant has merely substituted in the old combination old elements, or elements of which he admittedly is not the inventor, improving the combination not by any new co-operative action, but solely by the sum of the advantages accruing from the individual use of such elements. That an assemblage of elements which presents an improvement consisting only of the sum of the functions or advantages of the elements individually, and which presents no additional function nor advantage arising solely from the act of assemblage, is not a display of invention, but a mere wise selection from the art at one's disposal, to be expected of one conversant with and skilled in the art, is thought to be well settled. *Hailes vs. Van Wormer*, 20 Wallace, 353. It is believed applicant has but substituted elements in an old combination without any change of function of the elements individually or of the combination, and without other result than the sum of the obvious advantages arising from the individual employment of such elements.

Applicant is admittedly not the inventor of the material used in the record tablet. See page 2 of this specification, last line, and the first three lines of page 3. Applicant is not even the first to use this material in a record tablet. See lines 3 to 7, page 3. That such material results in durability, and has a capacity to resist wear and deformation, is true, irrespective of the kind of reproducer with

*not  
disclosed  
by  
applicant  
in  
prior  
art*

which it is used. This material adds the same advantage in applicant's construction that it added to the art when first used by Ayleworth in record tablets.

*1/20*

The pitch of record groove used by applicant is disclosed in Tainter (page 1, lines 31 to 34). Tainter's record is also of the vertically undulatory type. It is not seen wherein there is any novel cooperation between the pitch of the groove and the material of the tablet in applicant's structure. Nor is it seen that applicant's groove cooperates with his reproducer any differently than does Tainter's groove with his reproducer.

The reproducer disclosed by applicant is of the general type disclosed by him in his patent 1,055,621, of Mar. 11, 1913 (see page 4 of the present application, lines 13 to 15). In the present application he has provided a heavy weight. But it has been common to select a desired heaviness of weight.

*not  
disclosed  
by  
applicant  
in  
prior  
art*

Russell shows an auxiliary weight B attached to the usual weight A. Mobley discloses his weight as made heavier so as to obtain a more intimate engagement between the stylus and record groove. See page 1 of his specification, lines 12 to 18, lines 26 to 40, and lines 68 to 95. Carter also discloses an auxiliary weight 14 that may be adjusted with respect to the main weight 3. Note, also, that Carter's reproducer is to be used with record grooves of 100 or 200 threads to the inch. Not only is applicant's object old, as in Mobley, but the result is not seen to be more than a matter of degree. The heavier the weight, the more intimate the engagement. That a heavier weight could be used with harder material is seemingly self-evident. The particular weight employed is a matter of selection and the result to be obtained is predictable. Applicant asserts no merit in the particular weight used, and, in fact, says he may use up to a four ounce weight. His idea is the increase of weight,

*Parts & quantity*

rather than any particular quantity of weight. Accordingly, his result is a difference in degree, rather than in kind. It would hardly be contended that each addition of an ounce to the usual floating weight is a new invention. It is not seen, then, that applicant's weight has any novel cooperation in the combination or produces any other than an obvious change in degree as respects any resulting improvement.

It is also to be noted that Leeds discloses as heavy weights as does applicant. While Leeds does not utilize his weights to increase the stylus pressure, the latter is a function inherent in the structure by adjustment of weight B relatively to A, whereby the balance of B and A would be disturbed. Under the ruling in National Brake Beam Co. v. Interchangeable Brake Beam Co., 106 Fed., 693, such a structure in a different condition of adjustment is not a display of invention.

*See also Leeds' patent, No. 719,639, which is prior to applicant's patent, No. 719,639, and is a disclosure of the same invention.*

Applicant makes no assertion of novelty as to the shape of his stylus. A rounded record engaging end is conventional. See 11 in Fig. 3 in Carter's patent, for example. That the material employed is not new in this application, see page 4 herein, lines 15 to 20. It is not seen that applicant's stylus cooperates with either the record or the reproducer in any different way than it does in every reproducer in the art. The use of a harder material, if a softer material will wear, owing to the nature of the record material, is thought no more than to be expected of any one conversant with the art.

*See also Leeds' patent, No. 719,639, which is prior to applicant's patent, No. 719,639, and is a disclosure of the same invention.*

Each of the elements entering into applicant's structure, then, is believed to perform its old function in its old way, without changing the function of the combination; and the combination is improved only by the sum of the improvements inherent in the elements individually, and in a way and to an extent obvious from a knowledge of such elements as they existed

before applicant substituted them in the present structure.

With this general explanation, an extended discussion of the claims individually is thought unnecessary.

The limitation at the end of claims 1, 2, 3 and 4, with respect to the record material, as "having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure", is believed to add nothing of patentability to these claims, as the statement is only that of a result, not of means to accomplish a result. Obviously, a result is not patentable, but only the means to accomplish it.

Moreover, the definition of the record material in claims 1 and 2 as "hard rigid material" and as "substantially more rigid than celluloid" is no more than that of the well known shellac composition of commercial record tablets.

While claims 1, 5 and 6 specify the pitch of the record groove as not less than 150 threads to the inch, claims 2, 3 and 4 specify the groove shall not be greater than .0075 of an inch. This is an entirely arbitrary figure representing approximately a pitch of 133 threads to the inch, and has no particular significance of itself, being greater than the width actually used if the pitch is not less than 150.

It is to be noted that the definition of the stylus in claims 1, 2, 3 and 5, as of "hard material" is expressive of no more than the conventional sapphire stylus. See Carter's specification, page 1, lines 94 and 95. Note, also, that in this reference sapphire is used with a narrower groove even than that disclosed in this application, i.e., having a pitch of 200 threads to the inch.

As to the weight employed, attention is directed that in claim 1 it is described only as of "sufficient pressure to

*Now this is not  
of the prior art*

*not  
material  
of the  
hard  
material*

force the stylus to follow accurately all of the undulations of said groove". This statement is expressive of a result solely, and, it is thought, can not be considered as adding patentability to the claim, as it does not define structure and is, at most, expressive only of a difference in degree from the prior art.

For these reasons, it is submitted that the claims were properly finally rejected.

Respectfully submitted,

October 5, 1915.

Examiner, Div. 23.



DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

October 6, 1915

Sir:

The case of Thomas A. Edison

Serial No. 719,539, will be heard by the ~~Commissioner~~  
~~Examiners-in-Chief~~  
on the 30th day of November, 1915.

The hearings will commence at <sup>ten</sup>~~one~~ o'clock, and as soon as  
the argument in one case is concluded the succeeding case will  
be taken up.

If any party, or his attorney, shall not appear when the  
case is called, his right to an oral hearing will be regarded  
as waived.

The ~~time~~ allowed for arguments is as follows:

Ex parte cases, thirty minutes;  
Motions, thirty minutes, each side;  
Interference appeals, final hearing, one hour each side.

By special leave, obtained before the argument is commenced,  
the time may be extended.

The appellant shall have the right to open and conclude in  
interference cases, and in such case a full and fair opening  
must be made.

Briefs in interference appeals must be filed in accordance  
with the provisions of Rule 147.

Respectfully,

*Thomas Ewing*  
Commissioner of Patents.

To \_\_\_\_\_

To Frank L. Dyer, Esq. \_\_\_\_\_

Orange, \_\_\_\_\_

N. J. \_\_\_\_\_

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison :  
PHONOGRAPHS OR TALKING MACHINES : Before the Honorable  
Filed September 10, 1912 : Board of Examiners-in-Chief  
Serial No. 719,629 :

APPELLANT'S BRIEF

This is an appeal from the Examiner's final rejection of the claims of this application. It is thought that the issue involved in this appeal will be best understood by reference to claim 6 which reads as follows:

6. The combination with a sound record containing a final hardened phenolic condensation product and having a record groove of a pitch of not less than 150 threads per inch formed with vertical record undulations, of sound reproducing means comprising a diamond reproducer stylus, and means for pressing said stylus against said undulations with a pressure no less than two and a half ounces, substantially as described.

That the specific arrangement set forth in this claim is novel is not denied by the Examiner. Nor does the Examiner deny that this arrangement produces an improved result. The invention has gone into extensive commercial use, being employed on all of the disc phonographs put out by Thomas A. Edison, Incorporated.

Stated concisely, the Examiner's position appears to be that appellant has produced an aggregation rather than a true combination. It is submitted that the Examiner is in error and that the claims appealed cover patentable combinations.

An aggregation and a combination are defined as follows in American Chocolate Machinery Co. v. Helmetetter, 142 F. 978:-

"The distinction between a combination and an aggregation lies in the presence or absence of mutuality of action. To constitute a combination it is essential that there should be some joint operation performed by its elements, producing a result due to their joint and co-operating action, while in an aggregation there is a mere adding together of separate contributions, each operating independently of the other."

Considering appellant's invention in the light of the above definition, it will be seen to be a true combination. Appellant's object was to produce a combination with which a true sound reproduction of long duration could be obtained from a record of ordinary size without damage to the record or stylus. This result is not due to the presence of any single element of the combination but is obtained by the joint operation of all the elements recited in the appealed claims in the relative arrangement described therein. A sound record formed of the hard rigid material specified would not produce a faithful sound reproduction with a stylus having only a light pressure thereon, as the stylus would not faithfully follow the record undulations but would skip over the minute undulations corresponding to overtones which give to the various instruments and voices their distinguishing qualities, and in the case of large undulations the stylus would be thrown completely off the record, thereby producing an objectionable blasting sound. If a reproducer stylus weighted as specified in the above quoted claim were employed with soft wax-like material

such as is contemplated in the patent to Tainter relied upon by the Examiner, the stylus would iron out the small undulations corresponding to the overtones instead of being vibrated by these undulations, and a faithful and pleasant reproduction would not be obtained. In this connection it is pointed out that, considering the stylus as bearing on the record over an area equal to a circle having a diameter of one-one hundred and fiftieth of an inch, the width of the record groove specified, and with a pressure of two and one-half ounces on the stylus, the stylus would bear on the record with a pressure of over two tons per square inch. It takes the combined action of the rigid record material, the stylus, and the means for pressing the stylus on the record with the degree of pressure specified to cause the stylus to accurately reproduce the minute sound undulations and therefor to give a faithful reproduction. In addition to this combined function, there is a definite correlation between the record and the stylus, the record being made of final hardened condensation product and the stylus of diamond. Because of its brittleness, it was not obvious that diamond could be used for a stylus designed to contact with a record groove as fine as one hundred and fifty threads per inch. The brittleness of diamond has, in fact, been an obstacle in the use and formation of a fine stylus of that material and has necessitated the use by appellant of a special method of forming the stylus and a particular form of mounting for the stylus. Appellant is not aware of the commercial use of a diamond stylus prior to his invention. If an ordinary sapphire stylus, such as has been common in

the phonograph art, were employed with a record of the composition specified, it would soon be so objectionably worn away as to be unsuited for accurate reproduction. A stylus of hard material, such as diamond, would not be suited for the wax or shellac record of the prior art as it would soon destroy the undulations of the record groove. There is a certain relationship between the record and stylus specified by appellant which makes it possible to maintain a permanent stylus in the reproducer without causing damage or substantial wear to the record groove or to the stylus.

Considering the references cited by the Examiner more in detail, it is true that the patent to Tainter specifies that the lines of the spiral may be one-one hundred and fiftieth of an inch apart, but there was no contemplation whatever by Tainter of a heavy weight such as is specified by appellant nor of a diamond stylus. The composition employed by Tainter is a soft wax-like recording medium, and with such a medium, a large part, if not substantially all of the undulations of a record groove of the pitch specified would be entirely ironed out by a stylus having thereon the pressure specified in the issue. There is no suggestion in the patents to Russell, Mobley and Carter, nor in the patent to Leeds, of appellant's combination nor even of a stylus having as great a pressure thereon as specified by appellant. The reproducers shown in these patents are small reproducers with a comparatively small weight. Appellant is especially familiar with the Mobley reproducer, having

placed on the market many reproducers containing the invention of this patent. With these reproducers, the pressure on the stylus was only about one ounce. Appellant cannot understand why the Examiner insists upon citing the patent to Leeds, in view of the fact that Leeds does not utilize his weights to produce a large pressure. In fact, Leeds specifies that with his construction "the reproducing point carried by the reproducer can normally be made to rest lightly upon the sound record", and that the "reproducing point V does not bear upon the sound record with any considerable additional force and does not therefore wear away and destroy the sound record". Attention is particularly directed to lines 16 and 17, page 1; lines 25 to 28 and lines 43 to 46, page 2 of Leeds's specification. It is not seen how it is at all material what the actual weights which are employed by Leeds may be, inasmuch as these weights are not used to produce a pressure on the stylus but to counter-balance the pressure thereon. It will be seen that in none of these references is there any device which is at all suggestive of the combination employed by appellant or by which the improved results attained by appellant's invention are possible.

The Examiner relies upon the decision Hailes v. Von Wormer, 20 Wallace, 353. An inspection of this decision will show that there was no joint action in the elements of the device considered in said decision such as there is in appellant's invention. In the said decision, one of the claims held to be an aggregation was for a reservoir stove

or furnace in which the discharge end of the coal supply reservoir was contracted, in which the fire pot was expended at its upper end, and in which the flume passage extended downwardly. The Court stated as follows:-

" \* \* \* it is evident that the combination of the three devices named is not the work of invention. They have no relation to each other. Neither the form of the feeder nor the shape of the firepot bears at all upon the direction of the draft passages. There is no novel result flowing from the joint operation of the three devices. The revertible flues have no more to do with a stove supplied by a feeder than they would have with a stove supplied by hand."

The other claim held to be an aggregation was contained in a patent alleged to be for an improvement upon the patent in which the first claim referred to was contained. The device of the second claim differed from the structure shown in the first patent only by the addition of illuminating openings so that the fire in the stove could be seen and light given the room where the stove was. Referring to the illuminating openings, the Court stated:

"These were a well known device applied to stoves long before either of the patents were granted. They perform no peculiar office in the new combination. They have no possible relation to it. They do not affect, in the slightest degree, the results of that combination, whatever they may be. It is impossible to regard the mere addition of such openings to a stove containing the improvements described in the reissued patent, as the formation of a new patentable combination."

In view of the above it is clear that the various elements of the constructions sought to be covered in the patents litigated were entirely distinct in their functions. A mere light opening, of course, had no combinable relation

with the rest of the stove. It did not affect its operation but was a mere aggregation in connection with the rest of the device. But, as pointed out above, in appellant's device there is a combined action of the various elements in producing an improved sound reproduction, and the said decision is accordingly thought not to be at all in point, except as it tends to show that an aggregation which is not the subject of a patent is an entirely different thing from the combination claimed by appellant.

The Examiner seems to lay great stress upon the fact that the various parts of appellant's combination have their own inherent advantages in appellant's construction. For example, the Examiner states as follows in connection with the composition specified: "This material adds the same advantage in applicant's construction that it added to the art when first used by Ayleworth in record tablets." This may be true, but only in the sense that it was a capability or advantage unused and unrecognized before it was placed in the combination.

In Bowers v. Von Schmidt, 63 F., 582, Judge McKenna declined to recognize as a rule of law that where the action of each of the combined devices remains its own individual action, there is no patentable combination.

In Felton Water Wheel Co. v. Doble, 190 Fed. 760, the Court stated as follows:-

"It is generally sufficient if there be such co-action that a result is produced which is new, and the result is new if it is substantially a better result than that which has been accomplished by other combinations."



In Pennsylvania Globe Gaslight Co. v. Best et al., 137 Fed., 940, the claim sued upon was as follows:-

"The combination in one device, of a portable incandescent lamp, of a Bunsen burner, an incandescent filamentary substance, and a self-generating and heating gas attachment, substantially as described."

Each of these elements was separately old, the incandescent filamentary substance employed being a common Welsbach mantle. The claim was held patentable.

In Celluloid Manufacturing Company v. Zylonite Co. et al., 35 Fed., 201, the claim was for the use of fusel oil as a solvent for camphor in conjunction with nitro-cellulose. The Court in holding the claim patentable stated as follows:-

"It was known previously that fusel oil was a solvent for camphor, and that various essential oils could be used in conjunction with camphor in the manufacture of pyroxyline. It is doubtless true that by experimenting with the whole list of essential oils any competent chemist could have ascertained that fusel oil would, while acting as a solvent of camphor, be efficient in producing the proper conversion of pyroxyline, and could have reached the discovery by a process of exclusion."

In George Frost & Co. v. Samsteg et al., 160 Fed. 739, the invention was for a garter having a button and a pear shaped loop, the button being of rubber or equivalent material in place of the material previously used. The Circuit Court of Appeals for the Second Circuit quoted with approval the language of Judge Wallace in his decision on a prior appeal on the same patent. Said language was as follows:-

"It was common knowledge that it (rubber) has the property of clinging, and its use on shoes, stairway steps, and for mats and floor coverings are familiar instances illustrating its adaptability to prevent slipping. That its selection was not an obvious thing is persuasively and cogently shown by the fact that during many years numerous inventors were trying to remedy the defects in the old device, and it did not occur to them how simply and satisfactorily this could be done by making the button of rubber or some other elastic or yielding material. Its employment in the device of the patent was a new one, and imparted to the device a remarkable efficiency, as compared with that of the best type of former devices. We have not overlooked the prior patent showing a device having a pair of jaws faced with springy or elastic material, which are pressed against the intervening fabric to hold it between them."

In view of the above decisions of the Courts, the patentability of appellant's claims as true combinations is believed to be clear. It is thought that the Patent Office should in a case of this character resolve all doubts in favor of the inventor, as otherwise he may be deprived of rights which would be sustained by the Courts in case the claims are allowed.

The claims not specifically considered above are for the same invention as that quoted but define the invention more broadly. The Examiner has in the last two pages of his answer to this appeal, for the first time raised certain objections to all of the claims except claim 6 above quoted, but it is thought that these claims are in good form and that none of the references discloses the combinations thereof.

Applicant has produced a novel device of increased efficiency in which the various elements coact to produce improved sound reproduction while permitting the recording

of a large amount of matter on the record disc and eliminating the wear of the various parts. That the invention was not an obvious expedient is demonstrated by the fact that with a knowledge of Lyleworth's composition and reproducers of the general type shown in the references, appellant spent a long time in experimentation before he perfected the invention. Largely on account of the improved results obtained by this combination, machines embodying the same have gone into extensive use, and the sale thereof is continually increasing. It is thought that such a meritorious invention should not be denied the protection of a patent.

The Honorable Examiners-in-Chief are accordingly respectfully requested to adjudge the appealed claims patentable.

Respectfully submitted,

Nov. 6, 1915.

Frank L. Weger,  
Attorney for Edison.

Feb. 888

2-202

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Sir:

Inclosed find copy of decision this day rendered by the  
Examiners in Chief in the ~~interference~~ <sup>ex parte</sup> case of .....

Thomas A. Edison, Serial No. 719,639.

EXAMINER-IN-CHIEF  
JAN 6 1913  
U. S. PATENT OFFICE

By direction of the Commissioner:

Very respectfully,

*W. F. Woolard,*  
Chief Clerk.

Mr. Frank L. Dyer, .....

Orange, .....

New Jersey, .....

E. L. L.

Hearing.  
Nov. 30, 1915.

Appeal No. 9043. U. S. PATENT OFFICE. January 6, 1916.

Before the Examiners-in-Chief, on Appeal.

Application of Thomas A. Edison for a patent for an improvement in Talking Machines, filed September 10, 1913, Serial No. 719,639.

Mr. Frank L. Iyer, attorney for appellant.

This is an appeal from the action of the primary examiner finally rejecting claims 1 to 6 inclusive, of which the following will serve as examples:

1. The combination with a sound record of hard rigid material having a vertically undulating record groove of a pitch of not less than 150 threads per inch, of sound reproducing means comprising a reproducer stylus of hard material having a rounded record engaging portion, and means for pressing said stylus against said record with sufficient pressure to force the stylus to follow accurately all of the undulations of said groove, the said record being substantially more rigid than celluloid and having such hardness and rigidity as to be subject to no appreciable wear or deformation by said stylus under said pressure, substantially as described.

6. The combination with a sound record containing a final hardened phenolic condensation product and having a record groove of a pitch of not less than 150 threads per inch formed with vertical record undulations, of sound reproducing means comprising a diamond reproducer stylus, and means for pressing said stylus against said undulations with a pressure no less than two and a half ounces, substantially as described.

The references cited are:

Tainter,	385,886,	July 10, 1888.
Russell,	681,981,	Sept. 3, 1901.
Mobley,	890,063,	Dec. 31, 1901.
Carter,	1,047,497,	Dec. 17, 1912.
Leeds, British,	12,560,	June 20, 1901.

It appears from the patents to Tainter and Carter that long prior to the filing of the present application it was proposed to make phonograph records having from 150 to 200 threads per inch, the object being to produce a longer playing record. It was also recognised, as shown by Mobley, that reproducers as ordinarily constructed were faulty in that the stylus was not held with sufficient pressure upon the surface of the cylinder to accurately follow the grooves therein and he provided a construction in which the stylus was weighted "to any extent desired to increase the weight and downward pressure". Records of celluloid and other hard materials had been produced and Carter and Russell disclose the use of a sapphire stylus in order to reduce wear and avoid the necessity of replacing the steel needles after each piece. The specification of the present application also concedes that the specific material of which the record is composed is not of applicant's invention, nor is he the first to make a record of the same, as all this is admittedly disclosed in applications of J. W. Ayleworth and the advantages of such a record are of course well understood. That a diamond stylus would stand more wear than a steel needle or even a sapphire, was also well known, as Edison proposed its use in his British patent No. 1644 of 1878, and a reference to a British patent to Jungbecker et al, 12,456 of May 31, 1902, is found in the file of the application of Trappagen, referred to in the appealed case as covering the specific reproducer which is disclosed in the present application.

In view of these facts we are of the opinion that all the elements of each of the claims are old, and that in the combinations specified each performs the function for which it was designed, and no more, the better result claimed for the machine being due merely to the added advantages of the several parts. The combination is the old one found in all graphophones and the improvements in each of the parts are also old, their equivalence being fully recognized when they were originally produced. We find nothing patentable in the case, and the decision of the examiner is affirmed.

Frank C. Skinner

Fairfax Boyard

(Third member absent)

Examiners-in-Chief.

Legal Dept -

We just filed a patent on  
Combs of a reproduces with a  
definite weight & the Condensate  
record. There has been an  
omission in the specification  
which should go in -  
see me.

Edison

Folio 884

7,888

Mr. Edison wishes this  
case to be afforded. He  
says that even with  
Ayleworth's composition known  
a large amount of  
experimenting was necessary  
to produce a suitable  
record.

Sept. 21, 1900

H/B.

See 7,993 -  
Bur - 7,1587.



December 15, 1916

Mr. Edison:-

FOLIO 888 - Phonographs or Talking Machines

This application covers the combination with a Condensite sound record with not less than 160 lines per inch and with vertically undulating record grooves, of a sound reproducer having a diamond stylus and means for pressing the stylus against the record undulations with a pressure no less than two and one-half ounces. The Examiners-in-Chief have held that there is nothing patentable in the case, their decision stating: "The better result claimed for the machine being due merely to the added advantages of the several parts". The decision of the Examiners-in-Chief is annexed to the back of the application which is sent herewith.

The question is whether or not the case should be appealed to the Commissioner. Mr. Holden and I are of the opinion that there is not much chance of securing any claims in this case by further appeal. The Patent Office fee for such an appeal would be \$20.00. If you wish the case appealed, do you wish Mr. Bull to argue the same? Mr. Bull's charges for his argument of the appeal in the Cement House application were \$128.87.

FB-JS

*Mr Bachman*

*T. Packman*

*Abandon*

**Patent Series**

**Patent Application Files**

Folio # 903      Methods of Presenting the Illusion of Scenes in Colors

Serial #:            728370

Primary Applicant: Edison, Thomas A

Date Executed: 10/24/1912

[PHOTOCOPY]

Folio No. 903

Serial No. 728 370

Applicant.

Thomas A. Edison

Address.

Llewellyn Park  
West Orange, N. J.

Title *Methods of presenting the Edison of Series on Colours*

Filed *October 29- 1912*

Examiner's Room No

Assignee

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Page

Patent No.

Issued

ACTIONS.

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|------------------------------------|----|
| 1. <i>Rejected April 16, 1913.</i> | 16 |
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FRANK L. DYER,  
Counsel,  
ORANGE, NEW JERSEY.

Original envelope

Written on the original envelope under actions:  
"Drop this case by order of Mr. Edison. Jan 15 - 1913.

File new case on method involving application of  
opaque pigment to negative. New case to be a  
contribution of this case which is division of applical  
in F-423."

# Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

- METHODS OF PRESENTING THE ILLUSION OF SCENES IN COLORS -

set forth in the annexed specification; and he hereby appoints Frank L. Dyer  
(Registration No. 560), of Orange, New Jersey, his attorney, with full  
power of substitution and revocation, to prosecute this application, to make  
alterations and amendments therein, to receive the patent, and to transact all  
business in the Patent Office connected therewith.

*Thos. A. Edison*

## SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in METHODS OF PRESENTING THE ILLUSION OF SCENES IN COLORS, of which the following is a description:-

This application is a division of my application Serial No. 448,292, filed August 13, 1908.

My invention relates to the method of presenting the illusion of scenes in colors and more particularly to improvements in the art of exhibiting moving pictures by means of which the effect of animated pictures in colors true to life is produced on the retina of an observer. The method consists broadly in momentarily projecting an image of all the elements of a scene of one fundamental color in that color; and of thereafter successively projecting images which are superimposed upon, or registered with, the first image on the retina of the beholder, of those elements of the scene of different fundamental colors in their proper colors respectively. These successive images are projected at such a rate that, in accordance with the phenomenon of persistence of vision, the former images persist in the vision of the beholder until after the last image of the series has been projected upon the screen, so that the whole series of images thus projected will register and blend together on the retina of the eye of the beholder, causing an image of the complete

scene in its proper and true colors to be formed on the retina. In the case of moving pictures, the scene thus produced, composed as it is of a plurality of parts of scenes, each one consisting of those elements of the scene of one fundamental color, corresponds to a single instantaneous scene in the case of ordinary black and white moving pictures, and is followed on the film by a succession of further scenes similarly composed each of its corresponding plurality of color elements showing slight variations in movement of the scenes, so that the effect of continuous movement and animation is produced, as is common in the art. More specifically, my invention consists in photographing upon a film, a succession of scenes, as is common in the moving picture art, except that the scenes are photographed at such a great speed that a succession of three scenes, in case it is desired to break up the scene into its three fundamental colors, may be superimposed one upon the other without perceptible change in outline. This series of views is then considered as one view to be decomposed into its various color elements. A positive film is then prepared from the negative in the usual way, and the positive film so treated that all the portions of each scene, except those representing the elements of that scene which are of the color which it is desired that scene should show, are rendered opaque. This may be done in various ways, as for example, by painting out the portions of the film which it is desired to render opaque, with a dark pigment. Images are now projected through the successive views on the positive film, each image being projected through a color medium appropriate

thereto and the images of the successive views are projected at such a rate that all the differently colored images of each series blend in the vision of the beholder to form the complete scenes in their natural colors. This last step is preferably carried out by feeding the film intermittently past the exposure opening of a moving picture projecting apparatus, while at the same time, a shutter, carrying sections of translucent or transparent material, such as glass of various colors, as green, red, and blue, is caused to rotate in front of the display opening continuously, the feed of the film being so adjusted that that part of a scene which should be shown, for example, in green, is exhibited in front of the display window during the time in which the green glass or other transparent material of the shutter is passing before the same. The opaque portion of the shutter then cuts off the view momentarily while the film is being fed forward the next section, whereupon another view, displaying, for example, those elements of the scene which should be shown in red, is displayed at the display window while at the same time the transparent red portion of the shutter is passing across the window. After this, the opaque portion of the shutter again cuts off while the film is being fed forward another step to display the blue portion of the scene under the blue glass of the shutter. By this means the source of light behind the film shines through the elements of a scene which should be exhibited in green and also passing through green glass produces an image on the screen of all the green elements of the picture. Similarly, images of all the red elements and images of all the blue



elements registered in their proper relation to each other in the picture, are produced on the retina of the beholder's eye in such rapid succession that all persist in the vision to form one picture.

In order that my invention may be better understood, attention is directed to the accompanying drawing, forming part of this specification and embodying one form of apparatus by means of which my improved method may be carried out and in which -

Fig. 1 represents a detail view of a section of film, constructed in accordance with my invention, and the shutter and part of the feed mechanism in section of a motion picture projecting apparatus by means of which the pictures on the film may be exhibited; and

Fig. 2 represents the image of the combined picture produced by the projection of three partial elements in colors upon the screen.

Referring to Fig. 1, the film 1 is provided with rows of perforations 2, and is fed by means of sprockets or feed wheels 3, engaging these perforations as is usual. The power is derived from the crank shaft 4 by means of suitable gearing 5 connecting the crank shaft 4 and a shaft 6, and an intermittent feeding mechanism 7 and 8, of any usual construction, as the well known Geneva stop between the shaft 6 and shaft 9 carrying the feed wheels 3. A bevel gear 10 on shaft 6 meshes with a bevel gear 11 on a shaft 12, which carries the shutter 13 and provides a continuous rotation for the latter. The shutter is provided with portions 14, 15 and 16 of transparent

glass, or other materials of different colors. Between these transparent portions of the shutter are opaque portions 17, 18 and 19.

In the scene represented as thrown upon the screen in Fig. 2, the house 20 is shown, for example, in red, against a background of blue sky 21, and green lawn 22. On the film, in one section thereof, the portion of the scene to be exhibited in green, that is, the lawn 22, was left untouched, while the remainder of the section was painted out, or otherwise rendered opaque, as shown at 23. In the following section of the film, that part of the scene to be displayed in red, namely, the house 20, was left transparent, while the remainder of the scene was rendered opaque and in the following section of the film, the blue sky 21 was left while the remainder of the section was rendered opaque. The following sections of the film in the case of a motion picture, would be similarly treated.

In operation, the film is so adjusted in the machine that the part of the scene which should be displayed in green, as for example, the green lawn in the foreground in the picture shown in Fig. 2, is caused to appear at the display opening 24 just as the section 14 of the shutter composed of green glass, is passing before the window 24. This image is displayed throughout the transit of section 14 across the window 24 and immediately upon the cutting off of the view by opaque member 17 of the shutter, the film is fed forwardly in the direction of the arrow, so that the succeeding section, showing the house 20, appears at the display opening just as transparent section 15 of the shutter which is red, begins to cross the display

opening. Similarly, after this view has been out off, section 21 showing the sky, appears at the display opening and is exhibited through the blue glass 16 of the screen. These three elemental images register in the vision of the beholder as is shown in Fig. 2, and are produced with such rapidity that the images of the first two sections shown persist in the vision of the beholder while the third section is being exhibited, thus creating the illusion of a complete picture of a red house against a background of blue sky and green lawn. To produce this effect successfully, the apparatus should be operated at a considerable speed. It is, of course, understood that the invention is equally applicable to the projection of isolated views, having no motion, or of views showing objects in motion. It is evident also that in the example given in the drawings, the transparent sections of the shutter might have been any colors and might have been as well two or four or of another number other than three, although, of course, it is evident that if the number of views into which a picture is divided, is made too great, the speed with which the pictures would have to be taken in order to obtain views with practically no movement between the same for the different color elements and also the exhibiting of the same in the machine in order that the law of persistence of vision might be complied with, would be too great to be practicable. In the example shown, the objects are each shown in the solid color belonging to one transparent section of the shutter. It is, however, apparent that combinations of color may be formed on the

retina of the beholder by the superposition of images of different colors upon the retina within the time limit allowed by the phenomenon of persistence of vision. For example, red and blue lights mingled produce purple; red and green produce yellow; blue and yellow produce a pale pink, etc. Accordingly, with a shutter carrying transparent sections of green, red and blue, it would be possible to show a yellow object, for example, or yellow elements of the picture, by leaving the parts of the picture which should produce the yellow effect on the eye of the beholder, transparent in the sections of film which should be exhibited under the green and red sections of the shutter successively. For considerations such as these, it is apparent that it is preferable to use for the shutter three transparent sections of those colors which as lights mingle together to produce white. It is apparent that it is possible, by my invention, to produce complete images of scenes in a great variety of shades and colors, by rendering opaque all those portions of the film in every section thereof which should not transmit the light of the color appropriate to that section and that by making the transparent portions of the film quite small, a showing of objects in many changing colors may be secured. With the apparatus shown in the drawings, the shutter is rotated one-third of a revolution for each successive forward feed of the film, one complete revolution of the shutter accompanying a forward feed of three pictures or sections of the film, which, however, produce only one complete picture in colors, equivalent to the usual instantaneous scene in black and white which accompanies the rotation of a shutter in the usual practice of the moving picture art.

It is apparent that my method may be carried out by numerous other types of projecting apparatus and shutters than those shown in the drawings. It is also evident that in carrying out my method it is not essential that a shutter be provided carrying transparent sections of different colored glass or similar material, as shown, since any means might be employed to cause the transmission of light of the desired color through a transparent portion of the film at the proper time. Any means by which the light is, with a proper periodicity, broken up into the desired colors, will suffice.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:-

1. The method of making a photographic film consisting in photographing at spaced intervals upon a transparent film a series of images of an object or scene, preparing a positive film therefrom, and blocking out solidly all the portions of each image other than those representing the portion of the scene photographed of a certain color, different in each view, substantially as described.

2. The method of making a photographic film consisting in photographing at spaced intervals upon a transparent film a plurality of series of images of a moving scene, preparing a positive film therefrom and blocking out solidly all the portions of each image other than those representing the portion of the scene photographed of a certain color, different in each view of a series, and recurring periodically in the various series, substantially as described.

3. The method of presenting the illusion of a scene in color consisting in photographing at spaced intervals upon a transparent film a series of images of the scene, preparing a positive film therefrom and blocking out solidly all the portions of each image other than those representing the portion of the scene photographed of a certain color, and projecting the series of images through said positive film, each image being projected through a color medium appropriate thereto at such a rate that all the differently colored images of the series blend in the vision of the beholder to form the complete scene in its natural colors, substantially as described.

4. The method of presenting the illusion of animated scenes in color, consisting in photographing at spaced intervals upon a transparent film a plurality of series of images of a moving scene, preparing a positive film therefrom and blocking out solidly all the portions of each image other than those representing the portion of the scene photographed of a certain color, different in each view of a series, and recurring periodically in the various series, and projecting the series of images through said positive film in a moving picture projecting apparatus, each image being projected through a color medium appropriate thereto at such a rate that all the differently colored images of each series blend in the vision of the beholder to form the complete scenes in their natural colors, substantially as described.

This specification signed and witnessed this 24th day of October 1912

Witnesseth:

Thos. A. Edison

1. William C. Hardy
2. Mary J. Laidlaw

## Oath.

State of New Jersey }  
County of Essex } ss.,

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llowellyn Park, West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in METHODS OF PRESENTING THE ILLUSION OF MOVIES IN COLORS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Sworn to and subscribed before me this 24th day of October 1912



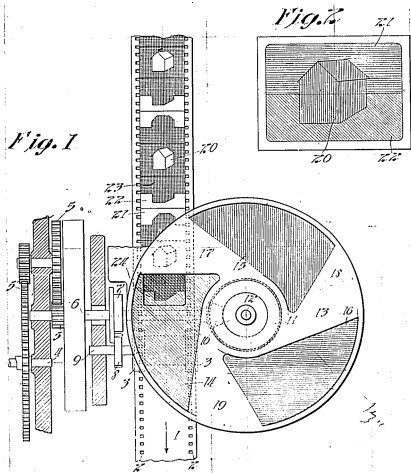
Thos. A. Edison  
Mary J. Laidlaw  
Notary Public.

NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

Pat. 905

728370

137  
1896



Witnesses:  
*Edw. J. ...*  
William G. ...

Inventor:  
*Thomas A. Edison*  
By *W. H. ...*



Div. 7 Room 312

2-980

N. Paper No. 2

Address only  
"The Commissioner of Patents,  
Washington, D. C."

All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

April 26, 1913

Frank L. Dyer,

Orange,

N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, filed Oct. 28, 1912, Method of presenting the

illusion of scenes in colors, Serial #788,370.

*E. B. Moore*

Commissioner of Patents.

4-9-201

The claims are rejected on

Smith, #941,960, Nov. 30, 1909;  
(88-17);

in view of

Vidal, #178,210, May 30, 1876;  
(95-8).

What applicant apparently does is to substitute for the color filters of Smith as a means of cutting out all the rays except those of a certain color in each picture, another old means as found in Vidal, namely, that of actually painting-out all portions except those corresponding to a certain color in each picture. (In reproducing applicant uses the same means as does Smith, namely, the color filters.) The substitution above pointed out is not seen to involve invention.

Claims 1 and 2 are also rejected as failing to distinguish patentably from Vidal; in view of the fact that a positive when used in certain color processes corresponds to a negative when used in a certain other color processes. Then all that these claims call for is the making of a series of positives with blocked-out portions instead of negatives with blocked out portions; which difference is not patentable in view of the fact

above stated.

J. H. J.

Examiner.

**Patent Series**

**Patent Application Files**

Folio # 905      Processes and Apparatus for Coating Phonograph  
Records and Other Articles

Serial #:            730343

Primary Applicant: Edison, Thomas A

Date Executed:    11/7/1912

[PHOTOCOPY]

Serial No. 720,243

Applicant. *Thomas A. Edison* Address. *Llewellyn Park  
West Orange, N. J.*

Title *Processes and Apparatus for Conting Phonograph  
Records and other Related*

Filed *November 9-1912* Examiner's Room No. *17*

Assignee \_\_\_\_\_

Ass't Exec. \_\_\_\_\_ Recorded \_\_\_\_\_ Liber \_\_\_\_\_ Page \_\_\_\_\_

Patent No. *1040000* Issued \_\_\_\_\_

ACTIONS.

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2	Amended	Nov. 28-1913	17
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4	Letter to Office	Dec. 30-1913	19
5	Office letter	Jan. 17-1914	20
6	Amended	Nov. 21-1914	21
7	Repealed	Dec. 2-1914	22
8	Amended	Nov. 3-1915	23
9	Amended	Nov. 19-1915	24
10	Amended	May 19-1918	25
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14			29
15			30

**VAULT**

*12/6/15*  
*see in Edison*  
*interstate*  
*7/2/18*

FRANK L. DYER,  
Counsel,  
ORANGE, NEW JERSEY.

# Petition.

To the Commissioner of Patents:

Your Petitioner **THOMAS A. EDISON**  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

- PROCESSES AND APPARATUS FOR COATING PHONOGRAPH RECORDS  
AND OTHER ARTICLES -

set forth in the annexed specification; and he hereby appoints **Frank L. Dyer**  
(Registration No. 560), of Orange, New Jersey, his attorney, with full  
power of substitution and revocation, to prosecute this application, to make  
alterations and amendments therein, to receive the patent, and to transact all  
business in the Patent Office connected therewith.

*Thos. A. Edison*

- S P E C I F I C A T I O N -

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have made certain new and useful improvements in PROCESSES AND APPARATUS FOR COATING PHONOGRAPH RECORDS AND OTHER ARTICLES of which the following is a description:

My invention relates to an improved process and improved apparatus of the general type described by me in my United States patent No. 713,863, dated November 18, 1902, the process and apparatus being adapted for covering articles, such as phonograph records, with an infinitesimally thin film or deposit of metal on which a heavier coating may be obtained by electro deposition in order that a matrix or mold of the record or other article can be secured for subsequent use in the duplication thereof. In carrying on the said process, the article to be coated is maintained in an exhausted chamber and the deposit thereon secured by maintaining between electrodes of the metal to be coated upon the article a silent or brush discharge of electricity of high tension, such as may be produced from an induction coil of large capacity or from an induction machine of approved type. The discharge between the two electrodes results in the vaporization of the metal of the electrodes and its rapid deposition upon the article to be coated. In effecting the coating upon a phonograph record, uniformity is secured by rotating the latter with respect to the electrodes.

The object of the present invention is more particularly to provide improvements in the process and

apparatus disclosed in the said patent whereby the latter are adapted to produce a uniform coating upon the face of a disc-shaped article, such as a disc sound record. Other objects of the invention will appear more fully in the following specification and appended claims.

In order that my invention may be better understood, attention is hereby directed to the accompanying drawing forming a part of this specification and in which -

Fig. 1 represents a view partly in elevation and partly in central vertical section of the preferred embodiment of my invention;

Fig. 2 represents a section thereof taken on the line 2-2 of Fig. 1; and

Fig. 3 represents a diagrammatic view illustrating <sup>the</sup> method of determining/preferred arrangement of the electrodes for producing a uniform coating on the record tablet or other article to be coated.

In all the views like parts are designated by the same reference numerals.

Referring to the drawings, the numeral 1 represents a base, preferably formed of glass, and the numeral 2 a cover or vacuum chamber supported upon a ring 3 of rubber or other suitable yielding material resting on the base 1. By the provision of the ring 3, an air tight connection is produced between the chamber 2 and the base 1 when the air is exhausted from the said chamber. A pipe 4 leads to the interior of the vacuum chamber and serves as a means through which air may be exhausted from said chamber, as by a vacuum pump (not shown). When the vacuum has been secured, it is retained by closing a valve 5 in the pipe 4 or by maintaining the vacuum pump in constant operation.

The pipe 4, as shown, has a vertical portion 6 extending through the base 1 near the periphery of the chamber 2 and a substantially horizontal end portion 7 directed towards the center of the vacuum chamber. In order to prevent the air when admitted into the vacuum chamber from being directed upon the article coated, I secure to the base 1 and over the portion 7 of the pipe a hood or deflector 8 having an outwardly directed opening, a mass 9 of fibrous material, such as cotton waste, being placed in the said hood and around the outlet portion 7 of the pipe 4 to filter the air entering the vacuum chamber and free the same from pump oil and other objectionable foreign matter. In the device shown, the hood 8 is made of glass.

Resting upon the base 1 is a block 10 supporting on its upper surface a plate 11 which carries or supports the insulating electrode supports 12, 12. The supports 12, 12, as also the block 10 and the plate 11, are preferably made of glass. Each support 12 is formed with a spirally curved base portion 14 from which extend upwardly directed fingers 15 carrying at their upper ends tapered caps 16, which latter project laterally beyond the fingers 15 and are provided with substantially horizontal perforations through which an electrode 17, preferably a wire of gold, extends and in which it is supported. <sup>*Inventor's Name*</sup> The projection of the caps 16 beyond the fingers 15 prevents to a large extent the deposit of the vaporized gold upon the fingers 15, and parts below the same. The manner in which the curvature of the base portions 14 is determined will be hereinafter described. The numerals 18, 18 represent two supporting arms made, preferably, of glass and leading up through the pipe 1 within the interior of the vacuum chamber. A conductor 19 leads up from without the vacuum chamber

through each of the arms 18 and is connected at its inner end to one of the electrodes 17, 17. Referring more particularly to Fig. 2 of the drawings, the upper conductor 19 is connected to the outermost portion of the adjacent electrode while the other conductor 19 passes, as shown at 19', from the arm 18 through an inwardly extending glass arm 20, and is connected at its inner end to the innermost extremity of the other electrode. As shown in the said figure, the arm 20 crosses over the top of the base portion 14 of the support for the electrode to which it is connected and under the said electrode. The electrodes are formed at their outer ends with upwardly extending loops 21 adapted to be arranged or positioned adjacent the peripheral portion of the article to be coated so as to ensure the coating of the same for a short distance back of the face thereof.

The supporting means for the article to be coated, in this case a disc sound record, are preferably constructed as follows: A standard 22 is securely mounted in a base 23 having a flange 24 passing through a central opening in the plate 11 and adapted to rest upon the top of the block 10 to hold the standard 22 in a substantially vertical position. Below the flange 24, the support 23 is formed with a substantially cylindrical portion 25 which is cemented, as by wax, into the block 10, the said portion 25 having projecting downwardly therefrom a centering pin 26 adapted to be inserted in a central aperture in the base 1 to hold the block 10, shaft 22, plate 11, and the parts supported thereby in central position within the chamber 2. The plate 11 is cut away, as shown at 11', so as to provide a recess in which the hood 8 is located. Rotatably and detachably supported on the standard 22 is a cylindrical head 27



surrounding the upper portion of said standard and having a jewel bearing 27' securely held in place therein by a screw 28, the said bearing resting upon the upper end of the standard X. <sup>3.5 "62/13</sup> The head 27 has formed thereon a spider 29 on the outer portion of which are clamps 30 provided with shoes 31 of yielding material, such as rubber, which shoes are adapted to bear against the peripheral portion of the sound record A to hold the same in position with its record surface at right angles to the axis of rotation of the head and spider. The clamp members 30 are provided with radial slots 32 through which pass pins 33 secured at one end to the spider 29 and carrying at their upper ends thumb nuts 34 adapted to be moved into clamping engagement with the upper surfaces of the clamps 30 to hold the same in position. By means of the connection above described between the clamps and the spider, the former may obviously be adjusted radially into and out of engagement with the periphery of the record A or they may be positioned to support records of different diameters. The peripheral portion of the record, and also the clamping faces of the shoes 31 are preferably inclined at an obtuse angle to the face of the record A so as to ensure the firm holding of the record in position, the latter resting, as clearly shown in Fig. 1 against the horizontal portion 29' of the spider.

In accordance with my process and apparatus, I prefer to effect the rotation of the record to be coated by a magnet or magnets movable exteriorly of the vacuum chamber and attracting an armature secured to the head 27. In the drawings the armature 35 is constructed as a bar of suitable material, such as iron or steel, secured at its central portion to the head 27, the terminal portions

of the said bar being located in proximity to the rotating electromagnets 36. These latter are carried by a bow-shaped frame 37 secured to a vertical shaft 38 which is rotatably mounted in a bearing 39 supported in any suitable manner. A pulley 40 secured to the upper end of the shaft 38 serves as a means whereby power may be imparted from any suitable source to rotate the said shaft and the frame 37 carrying the electromagnets 36. The shaft 38 has secured thereto rings 41 and 42 of conductive material, these rings being completely insulated from each other, as shown by the heavy black lines surrounding the same in Fig. 1. Brushes 43 and 44 bear upon the rings 41 and 42 respectively and are connected with the opposite poles of a battery or other source of current by means of wires or other conductors 45 and 46 respectively. The ring 41 is connected to the coil of one of the electromagnets by a conductor 47, the ring 42 being connected to the coil of the other electromagnet by a conductor 48, the two coils being connected to each other by a conductor 49. The current passes, for example, from the conductor 45 to the brush 43, thence to the ring 41, and thence through the conductor 47, the coil of the electromagnet to which the said conductor is connected, the conductor 49, the coil of the other electromagnet and the conductor 48 to the ring 42, whence it passes through the brush 44 to the conductor 46. By the construction described above, it will be seen that the frame 37 and the electromagnets carried thereby may be rotated by the pulley 40 without interfering with the energizing of the electromagnets from the source of power connected with the <sup>conductors 45 and 46</sup> electrodes 45 and 46. As stated above, the rotation of the record-carrying device is effected by attraction of the energized rotating magnets 36 upon the armature 35.

The numeral 50 designates a frame provided with upwardly extending posts 51 to the tops of which are secured pieces 52 of yielding or cushioning material such as rubber, upon which the base 1 is adapted to be supported. The frame 50 is provided with flanged wheels 53 resting upon tracks 54 secured to a foundation 55 whereby the frame 50 and all the parts carried thereby may be readily moved from one position to another, this construction permitting the ready shifting of the coated article to the vicinity of a bath in which a matrix of desired thickness may be formed upon the coating produced by the apparatus just described.

The discharge may be produced between the electrodes 17, 17 in any suitable manner, as by connecting the conductors 19 with the secondary 56 of a large induction coil, the primary 57 of which is included in a circuit with the vibrator 58 and the battery or other source of current 59.

I have found that in order that the electrodes 17 may produce a uniform coating upon the flat face of the record A, it is necessary that equal areas of the surface to be coated should be operated upon by equal lengths of electrode. In other words, the length of electrode and amount of vaporization in a ring between concentric circles having their centers at the axis of rotation of the record should vary in proportion to the area between said circles, increasing as the ring is taken farther and farther away from the center of the record. To determine the curvature of the electrodes, I therefore plot a plurality of concentric circles with the distances between each two adjacent circles constant, the radii of the outermost and innermost circles being respectively equal to the distances the

outer and inner ends of the electrodes are to be from the axis of rotation of the record. In Fig. 3 the numeral 61 designates the outermost and the numeral 62 the innermost circle, the space between these two circles <sup>being</sup> divided into fifteen rings of equal width. Having determined the proper length of electrode for the innermost ring, I start with a given point, such as the point 63, on the innermost circle 62 and locate, as by means of a pair of dividers, a point 64 lying on the circle next the circle 62 and spaced from the point 63 a distance equal to the said length of electrode. I then determine the ratio of the areas of the various rings to the area of the innermost ring and by multiplying these ratios by the distance between the points 63 and 64, I can readily determine the length of electrode required for each of the various rings above referred to. With these lengths determined, the form of the electrode 17 may readily be determined by marking off on each successive circle a point spaced from the point on the previous circle, a distance equal to the length of electrode for the ring between said circles, after which a smooth curve may be passed through the points plotted in this manner. It is understood, of course, that the successive points should be plotted in the same general direction away from the radial line passing through the starting point in order to secure a smooth curve. Although the curve between any two points will be slightly longer than the distance between the said points, and accordingly greater than the computed length of electrode to be used between these points, this method of plotting is sufficiently accurate for all practical purposes. The electrodes

are both made of the same form and are located in spaced relation to each other with their outer extremities located on a diametrical line passing through the axis of rotation of the tablet.

In operation, the magnets 36 are energized and set into rotation so as to rotate the armature 35, the record support, and the record therein. During the rotation of the record, a silent or brush discharge is produced between the electrodes 17, the latter being arranged parallel to and in proximity to the face of the record with the portions 21 thereof extending in proximity to the lower peripheral portion of the record, which is coated by the metal vaporized by the discharge, the said metal being deposited upon the record in the form of an infinitesimal<sup>1/2</sup> thin and practically uniform film. When the record is coated it may be removed and placed in a plating bath so as to receive a heavier deposit by a process of electro deposition, after which the original record may be removed, either by melting it out or by shrinking it from the deposited metal whereby an absolutely accurate matrix or mold of the original record is secured. The electrode supports 12 as well as the plate 11 may, with the construction herein described, be entirely removed from the remainder of the apparatus so that the same may be conveniently cleaned to remove the metal deposited thereon. A suitable solution for cleaning the gold off the said parts is a solution of potassium cyanide and hydrogen peroxide.

Many changes may obviously be made in the exact process and apparatus herein disclosed and I do not, therefore, limit myself to the exact details described above, but what I claim as new and desire to protect by

Letters Patent in as follows:

1. In apparatus of the class described, the combination of a vacuum chamber, a rotatable support in said chamber, and a plurality of electrodes <sup>725/13</sup> of material to be coated on said article mounted in said chamber in proximity to said support and at an angle to the axis of rotation thereof, said electrodes being arranged to produce a coating of substantially even thickness on an annular rotating surface substantially parallel thereto and having its axis at the axis of rotation of said support, substantially as described.

2. In apparatus of the class described, the combination of a vacuum chamber, a support in said chamber for an article to be coated, and a plurality of electrodes of material to be coated on said article mounted in said chamber in proximity to said support, the length of each electrode between concentric circles having their centers at the center of said support increasing with an increase in area between said circles, substantially as described.

3. In apparatus of the class described, the combination of a vacuum chamber, a support in said chamber for an article to be coated, and a plurality of electrodes of material to be coated on said article arranged in said chamber in proximity to said support, the length of each electrode between concentric circles having their centers at the center of said support and spaced a given distance apart increasing with the increase in diameter of said circles in proportion to the increase of area between said circles, substantially as described.

4. In apparatus of the class described, the combination of a vacuum chamber, a rotatable support in said chamber for an article to be coated, and a plurality of electrodes of material to be coated on said article arranged in said chamber in proximity to said support, the length of each electrode between concentric circles having their centers in the axis of rotation of said support and spaced a given distance apart increasing with the increase in diameter of said circles, substantially as described.

5. In apparatus of the class described, the combination of a vacuum chamber, a rotatable support in said chamber for an article to be coated, and a plurality of electrodes of material to be coated on said article arranged in said chamber in proximity to said support, the length of said electrodes between concentric circles having their centers in the axis of rotation of said support and spaced a given distance apart increasing with the increase in diameter of said circles in proportion to the increase of area between said circles, substantially as described.

6. In apparatus of the class described, the combination of a vacuum chamber, a rotatable support in said chamber for a disc shaped article, and a plurality of electrodes of material to be coated on said article arranged in said chamber in proximity to said support, the said electrodes being arranged substantially parallel to the face of the articles to be coated and at right angles to the axis of rotation thereof and exposing a constant area of electrode surface for a given area to be coated thereby, substantially as described.

7. In apparatus of the class described, the combination of a vacuum chamber, a rotatable support in said

chamber, and a plurality of electrodes of material to be coated on said article mounted in said chamber in proximity to said support, <sup>as described in Fig. 4</sup> substantially as described.

8. In apparatus of the class described, the combination of a vacuum chamber, a rotatable support therein, and a plurality of electrodes of material to be coated on an article carried by said support, each of said electrodes having a portion substantially at right angles to the axis of rotation of said support and a portion inclined to said first named portion, substantially as described.

9. In apparatus of the class described, the combination of a vacuum chamber, a support in said chamber for an article to be coated, and a plurality of <sup>substantially horizontal</sup> insulating electrode supports removably mounted in said chamber adjacent said support, substantially as described.

<sup>Cancelled 7/21/13</sup>  
10. In apparatus of the class described, the combination of a vacuum chamber, a rotatable support in said chamber for a disc shaped article, and a plurality of insulating electrode supports removably mounted in said chamber adjacent said support, substantially as described.

11. An insulating electrode support having a base portion and a plurality of supporting fingers projecting at an angle therefrom, substantially as described.

<sup>Rejection - See B1 44117</sup>  
12. An insulating electrode support having a base portion, fingers projecting at an angle from said base portion, and supporting caps mounted on said fingers and projecting laterally beyond the same, <sup>each of said fingers being provided with a cap</sup> substantially as described. <sup>the opening of each cap facing the op. of each cap adj. thereto</sup>

<sup>12</sup>  
13. An insulating electrode support having a base

Revised 11/12

cc. 11 - 11/12/13  
Cap. and tempering



portion, fingers projecting at an angle from said base portion, and tapering supporting caps mounted on said fingers <sup>and caps having perforations arranged to receive an electrode</sup> and projecting laterally beyond the same, substantially as described.

13. <sup>The combination with an 11/13</sup>  
14. An insulating electrode support having a base portion of spiral form and a plurality of supporting fingers <sup>of an electrode carried by said fingers 11/13</sup> projecting at an angle therefrom, substantially as described.

15. In apparatus of the class described, the combination of a vacuum chamber, a support in said chamber, electrode supporting means in said chamber, means whereby air may be removed from or admitted to said chamber, and means for filtering the air admitted into said chamber, substantially as described.

16. <sup>15</sup>  
17. In apparatus of the class described, the combination of a vacuum chamber, a support in said chamber, electrode supporting means in said chamber, means whereby air may be removed from or admitted to said chamber, and means for directing the air admitted to said chamber away from said support, substantially as described.

18. <sup>16</sup>  
19. The process of coating a disc-shaped article with electrically conductive material which consists in maintaining the article in an exhausted chamber, and establishing a discharge between electrodes in said chamber and in proximity to said article to vaporize the material of said electrodes at a rate increasing from the central portion towards the periphery of the article, substantially as set forth.

20. <sup>17</sup>  
21. The process of coating a disc-shaped article with electrically conductive material which consists in maintaining the article in an exhausted chamber, and establishing

between electrodes in said chamber and in proximity to said article a silent or brush discharge to vaporize the material to be coated on the article at a rate increasing from the central portion towards the periphery of the article in proportion to the increase of the area to be coated from the center to the periphery of the article, substantially as described.

18.  
18. The process of coating a disc-shaped article with electrically conductive material which consists in rotating the article in an exhausted chamber, and establishing between electrodes in said chamber and in proximity to said article a silent or brush discharge to vaporize the material to be coated on the article at a rate increasing from the central portion towards the periphery of the article, substantially as set forth.

19.  
19. The process of coating a disc-shaped article with electrically conductive material which consists in rotating the article in an exhausted chamber, and establishing a discharge between electrodes in said chamber and in proximity to said article to vaporize the material to be coated on the article at a rate increasing from the central portion towards the periphery of the article in proportion to the increase of the area to be coated from the center to the periphery of the article, substantially as described.

Invent A<sup>1</sup> - Claims 10 7/25/13  
Invent A<sup>2</sup> - Claims 20-25 inclusive 7/29/13  
Invent B<sup>1</sup> - Claims 11-12 7/31/14  
" B<sup>2</sup> " 26 & 27

This specification signed and witnessed this 7<sup>th</sup> day of November 1912

Witnesseth:

- Thos. A. Edison
1. Frederick Bachmann
  2. Mary J. Laidlaw

## Oath.

State of New Jersey } ss.  
County of Essex }

THOMAS A. EDISON, the above named  
petitioner, being duly sworn, deposes and says that he is a citizen of the United  
States, and a resident of Llewellyn Park, West Orange, Essex County,  
New Jersey,

that he verily believes himself to be the original, first and sole inventor of the  
improvements IN PROCESSES AND APPARATUS FOR COATING PHOTOCGRAPH RECORDS  
AND OTHER ARTICLES -

described and claimed in the annexed specification; that he does not know and  
does not believe that the same was ever known or used before his invention or  
discovery thereof; or patented or described in any printed publication in the  
United States of America or any foreign country before his invention or  
discovery thereof, or more than two years prior to this application; or patented  
in any country foreign to the United States on an application filed more than  
twelve months prior to this application; or in public use or on sale in the  
United States for more than two years prior to this application; and that no  
application for patent upon said invention has been filed by him or his legal  
representatives or assigns in any foreign country.

Thos. A. Edison  
Sworn to and subscribed before me this 7<sup>th</sup> day of November 1912 -

(Seal)

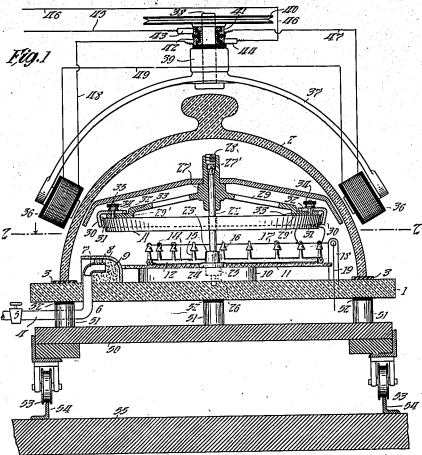
Mary J. Laidlaw  
Notary Public.

NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

Pat. 5. E

730,343 Oct. 15  
3

24  
64 -



*Witnesses:*  
*James D. Davis*  
*Frederick Bachman*

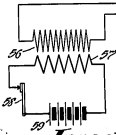
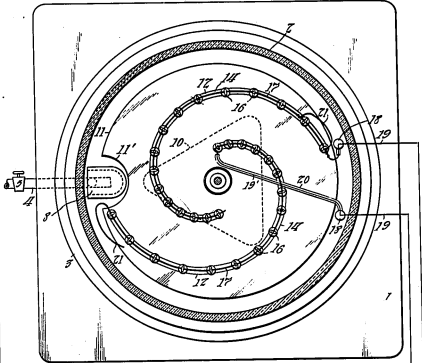
*Inventor:*  
*Thomas A. Edison*  
*By Thomas H. Brown*  
*Wm. H. H. H.*

Pat. 965

732,343

1

Fig. 2



**Witnesses:**  
 Frank H. Kern  
 Frederick C. Ashman.

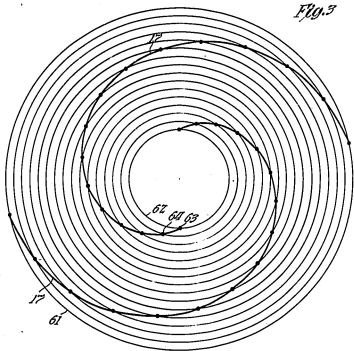
**Inventor:**  
 Thomas A. Edison  
 by Frank T. Brown  
 His Atty.

Pat 905

730,343

3

Fig. 3



**Witnesses:**

Frank D. Lewis  
Medwin R. Bachmann

**Inventor:**

Thomas A. Lewis  
by Frank T. Dyer  
His Atty.

Div. 3 Room 175

2-260

Paper No. 2

Address only  
"The Commissioner of Patents,  
Washington, D. C."

All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

WLR/RAT

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

Dec. 28, 1912.

E. A. Edison,

C/o Frank L. Dyer,

Orange, N.J.



Please find below a communication from the EXAMINER in charge of your application.

730,543, filed Nov. 9, 1912----

Process for Coating Phonograph Records

6-5001

*E. B. Moore*  
Commissioner of Patents.

Page 6, line 4 from bottom, "electrodes" should be  
conductors.

Page 9, line 15 "infinitesimal" should be infinitesi-  
mally.

Claims 9 and 10 fail to avoid----

Edison, 713,863, Nov. 18, 1902, 204, Cath. Metal. 75, or  
Reynard, 929,017, Jul. 27, 1909, same class.

The clause "for a discshaped article" is not considered to con-  
stitute any limitation in claim 10, as to the structure of the  
apparatus.

Claims 11, 12 and 13 read upon the ordinary cross  
arm of telegraph poles.

The words "electrode support" do not serve to set forth  
any limitation in structure.



Examiner, Div. 3.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
PROCESSSES AND APPARATUS )  
FOR COATING PNEUMOGRAPH RECORDS ) Room No. 175.  
AND OTHER ARTICLES, )  
Filed November 9, 1912, )  
Serial No. 730,343. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of December 28, 1912, please amend the above entitled case as follows:

In line 22, page 3, after "provided"  
insert - adjacent their smaller ends - .

In line 4, page 5, change "7" to - 22 - .

In the 4th line from the bottom of page 6  
change "electrodes" to - conductors - .

In line 15, page 9, change "infinitesimal"  
to - infinitesimally - .

In lines 3 and 4, claim 1, cancel "of  
material to be coated on said article".

In line 5, claim 7, after the comma (,) *in line 5, claim 7, after the comma (,) insert*  
insert - one of said electrodes having portions arranged  
respectively at different inclinations to the axis of

rotation of said support - .

In line 3, claim 9, after "of" insert  
- substantially horizontal - .

Cancel claims 10 and 11 and insert the  
following as new claim 10:

*10. An electrode support having a base and a perforated*  
10. An electrode support having a tapering insulat-  
ing supporting member provided adjacent its smaller end  
with a perforation arranged to receive an electrode, sub-  
stantially as described.

*The opening of each member  
is arranged to receive an electrode  
1 member adjacent thereto.*



Change the numerals of claims 12 to 20 inclusive to 11 to 19 inclusive.

In line 4, claim 11, (former claim 12) after the comma (,) insert - said caps having perforations arranged to receive an electrode - .

In line 4, claim 12 (former claim 13) after the comma (,) insert - said caps having perforations arranged to receive an electrode - .

Add the following claims:

20. The process of coating an article which consists in rotating the article in an exhausted chamber about an axis at an angle to the surface to be coated, and establishing between electrodes in said chamber and in proximity to said surface a silent or brush discharge to vaporize the material to be coated on said surface at a rate increasing with the increase of distance away from said axis, substantially as set forth.

a 21. In apparatus of the class described, the combination of an air tight chamber, a support in said chamber for an article to be coated, and a plurality of electrodes mounted in said chamber, the length of one of said electrodes between concentric circles having their diameters at the centre of said support increasing with the increase in area between said circles, substantially as described.

22. In apparatus of the class described, the combination of an air tight chamber, a rotatable support in said chamber for an article to be coated, and a plurality of electrodes in said chamber, the length of one of said

electrodes between concentric circles having their centers in the axis of rotation of said support and spaced a given distance apart increasing with the increase in diameter of said circles in proportion to the increase of area between said circles, substantially as described.

23. In apparatus of the class described, a rotatable support having a base portion, and means connected to said base portion for clamping an article in position on the support, substantially as described.

24. In apparatus of the class described, a rotatable support having a base portion and adjustable clamping means for securing an article in position on the support, substantially as described.

25. In apparatus of the class described, a rotatable support having a base portion, and clamping means connected to said base portion, said clamping means having shoes of yielding material arranged to bear against the article to be supported, substantially as described.

#### REMARKS

The electrode arrangement specified in claims 1, 7, 9, 21 and 22 and the nature of the discharge specified in claim 20 are not disclosed in the references and these claims are accordingly thought to be patentable.

Claims 10, 11 and 12 specify that the supports or the caps forming a part thereof have perforations arranged to receive an electrode, this feature not being disclosed in the prior art of record.

Claims 23, 24 and 25 specify a supporting

structure which is thought to be new.

Reconsideration and allowance are respectfully  
requested.

Respectfully submitted,

THOMAS A. EDISON

By

Frank H. Dyer  
his Attorney.

Orange, New Jersey,

November 28, 1913.

FB-ZCK

Div. 3 Room 185

185

2-200

Paper No. 4

"The Commissioner of Patents,  
Washington, D. C.,  
and not any official by name."

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

WLR/RAJ

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

Dec. 18, 1913.

Frank L. Dyer,

Orange, N.J.



Please find below a communication from the EXAMINER in charge of the application of

Thos. A. Edison, Process and Apparatus for Coating etc

730,343, filed Nov. 9, 1912.

6 6-2231

*Thomas Ewing*  
Commissioner of Patents.

Replying to amendment filed Nov. 29, 1913.

Claims 10, 11 and 12 fail to avoid the style of insulator well known in electric transmission lines, forming the sub-class 173 Non-Aligning Slots. It is considered to involve only mechanical skill to form a closed ring in place of an open ring where only a short piece of wire is to be used. There seems to be no other reason or difference which might constitute any patentable feature in applicant's insulator over that of the class above cited,

Examiner, Div. 3.

*Look to  
Lut  
C. H. H.*

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
PROCESSES AND APPARATUS )  
FOR COATING PHOTOGRAPH )  
RECORDS AND OTHER ARTICLES, ) Room No. 175  
Filed November 9, 1912, )  
Serial No. 730,343. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In accordance with Rule 66 of the Rules of Practice, the Examiner is respectfully requested to give the numbers of the patents in sub-class 173 Non-Aligning Slots on which he relies in rejecting claims 10, 11 and 12, so that applicant may be saved the trouble of examining the whole sub-class and the expense of purchasing the same.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Myers  
his Attorney.

Orange, New Jersey,  
December 30, 1913.

FB-KGX

Div. 3, Room 175

175

2-200

Paper No. 6

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

The Commissioner of Patents,  
Washington, D. C.,  
and not any official by name.

WLR/RAJ

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Jan. 17, 1914

Frank L. Dyer,

Orange, N.J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Processes and Appts. for Coating etc

730,343, filed Nov. 9, 1912.

Thomas Ewing  
Commissioner of Patents.

2-201

Replying to letter of Dec. 31, 1912.

In response to applicant's request that some specific patent of Class 173 Non-Alining Slots, be cited, the patent to Guseman, 97,392, Nov. 30, 1869, of that class, is a good example of that subject of invention.

Examiner, Division 3.

✓

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
PROCESSER AND APPARATUS )  
FOR COATING PHONOGRAPH )  
RECORDS AND OTHER ARTICLES, ) Room No. 176  
Filed Nov. 9, 1912, )  
Serial No. 730,343. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of January 17, 1914, please amend the above entitled case as follows:

In line 24, page 3, after the period (.)

insert the following sentence: - The perforation of each finger faces the perforation in each finger adjacent thereto, and the electrode 17 extends in a smooth unbroken curve parallel to the base portion 14 - .

Rewrite claims 10, 11 and 12 as follows:

*The combination with an 11/15*  
10. ~~An~~ electrode support comprising a base and a plurality of supporting members projecting from said base, each of said members being provided with an opening arranged to receive an electrode, the opening of each member facing the opening in each member adjacent thereto, <sup>of an electrode extending through said opening</sup> substantially as described.

*The combination with an 11/15*  
11. ~~An~~ insulating electrode support having a base portion and projections extending from said base portion, each of said projections being provided with a cap projecting laterally beyond the same and having an opening arranged to receive an electrode, the opening of each cap facing the opening in each cap adjacent thereto, <sup>of an electrode extending through said opening</sup> substantially as described.

*The combination with an 11/15*  
12. ~~An~~ insulating electrode supporting having a base portion and projections extending from said base portion,

each of said projections being provided with a tapering <sup>downwardly and outwardly</sup>  
cap projecting laterally beyond the same and having an <sup>where said downwardly and outwardly tapered portion thereof</sup>  
opening arranged to receive an electrode, the opening of <sup>of an electrode extending through said opening</sup>  
each cap facing the opening in each cap adjacent thereto, <sup>11/15</sup>  
substantially as described.

Add the following claims:

<sup>cancelled 11/15</sup>  
26. An insulator having a supporting portion formed  
as a closed ring, substantially as described. <sup>11/15</sup>

<sup>2</sup>  
27. An insulator having a supporting portion formed  
as a closed ring and a tapered portion extending from said  
first named portion, substantially as described.

#### REMARKS

Claims 10, 11 and 12, as now presented differ-  
entiate from the references by specifying an electrode  
support having members or caps each provided with an open-  
ing arranged to receive an electrode, the opening of each  
member or cap facing the opening in each member or cap  
adjacent thereto.

Referring to new claims 26 and 27, these claims  
thought to be  
are patentable and necessary to fully protect the applicant  
in his invention, the electrode set forth in these claims  
not being disclosed in the references.

Reconsideration and allowance are respectfully  
requested.

Respectfully submitted,

THOMAS A. EDISON,

By Frank R. Dyer,

his Attorney.

Orange, New Jersey.

November 21, 1914.

FB-KGX



Div. 3 Room 175

2-260

Paper No. 8

*Address only*  
The Commissioner of Patents,  
Washington, D. C.,  
and not any official by name.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

St/RAJ

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Dec. 5, 1914.

Frank L. Dyer,

Orange, N.J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Processes and Apparatus for Coating etc

750,543, filed Nov. 9, 1912.

*Thomas Edison*  
Commissioner of Patents.

4-282

Replying to amendment filed Nov. 23, 1914.

Claim 26, line 1, "supporting" is misspelled.

None of the claims 10, 11, 12, 13, 26 or 27 defines

an electrode but only an insulator. They constitute a separate  
and distinct invention and division is required between them and  
the other claims. See ex parte Hall et al., 105 O.G., 745.

Claims 10, 11, 12, 26 and 27 are rejected on--

Osman, 451,950, May 12, 1891, 175 - 28

in view of--

Hangell, 321,720, Dec. 26, 1893, 175 - 28 or  
Henderson, 660,271, Oct. 23, 1900, 175 - 28.

Examiner, Division 3.

*Include reference  
in claims  
to the claims  
of Hangell  
& Henderson  
as prior art*

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PROCESSES AND APPARATUS FOR COATING  
PHONOGRAPH RECORDS AND OTHER ARTICLES

Filed November 9, 1912

Room No. 175.

Serial No. 730,343

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of December 5, 1914, please amend the above entitled case as follows:-

Claim 10, line 1, change "An" to - The combination with an - . Line 2, after "base" insert - and arranged in a curved line thereon - . Line 5, after "thereto," insert - of an electrode extending through said openings, - .

Claim 11, line 1, change "An" to - The combination with an - . Line 4, after "portion", second occurrence", insert - and arranged in a curved line thereon - . Line 6, after "thereto," insert - of an electrode extending through said openings, - .

Claim 12, line 1, change "An" to - The combination with an - . Line 3, after "a" insert - downwardly and outwardly. Line 5, after "arranged" insert - above the downwardly and outwardly tapered portion thereof - . Line 6, after "thereto," insert - of an electrode extending through said openings, - .

Claim 13, line 1, change "An" to - The combination with an - . Line 3, after "therefrom" insert - of an electrode carried by said fingers - .

Cancel claims 26 and 27.

R E M A R K S

Claims 10, 11, 12 and 13 now specify an electrode and are accordingly thought to be properly included in this application with the rest of the claims.

Claims 10 and 11 specify that the supporting members or projections are arranged in a curved line on the base portion, a construction now shown in any of the references.

Claim 12 specifies that the caps are tapered downwardly and outwardly and that the opening for each cap is arranged above the downwardly and outwardly tapered portion.

Reconsideration and allowance are respectfully requested.

Respectfully submitted,

THOMAS A. EDISON

By

Frank L. Myers

His Attorney

Orange, N. J.

November 3, 1915

FE-JS

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON Nov, 19 1915

Thomas A. Edison

Sir: Your APPLICATION for a patent for an IMPROVEMENT in  
Process & Apparatus for Coating Phonograph Record & other

filed Nov. 9 1912 Article has been examined and ALLOWED.  
The final fee, TWENTY DOLLARS, must be paid not later than  
SIX MONTHS from the date of this present notice of allowance.  
If the final fee be not paid within that period, the patent on  
this application will be withheld, unless renewed with an  
additional fee of \$15, under the provisions of Section 4897,  
Revised Statutes.

The office delivers patents upon the day of their date, and  
on which their term begins to run. The printing, photolitho-  
graphing, and engrossing of the several patent parts, prepara-  
tory to final signing and sealing, will require about four  
weeks, and such work will not be undertaken until after payment  
of the necessary fee.

When you send the final fee you will also send, DISTINCTLY  
AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVEN-  
TION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE  
(which is the date of this circular), DATE OF FILING, and, if  
assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an  
assignment containing a REQUEST to that effect, together with  
the FEE for recording the same, must be filed in this office on  
or before the date of payment of final fee.

After issue of the patent uncertified copies of the draw-  
ings and specifications may be purchased at the price of FIVE  
CENTS EACH. The money should accompany the order. Postage  
stamps will not be received.

Final fees will NOT be received from other than the appli-  
cant, his assignee or attorney, or a party in interest as shown  
by the records of the Patent Office.

Respectfully,

Thomas Ewing  
Commissioner of Patents.

Frank L. Dyer

Orange

New Jersey

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNIDENTIFIED CHECKS WILL NOT BE ACCEPTED.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison	)	
PROCESSES AND APPARATUS FOR	)	
COATING PHONOGRAPH RECORDS	)	PETITION FOR THE RENEWAL
AND OTHER ARTICLES	)	
Filed November 9, 1912	)	OF FORFEITED APPLICATION
Serial No. 730,343	)	

TO THE COMMISSIONER OF PATENTS:-

Your petitioner, Thomas A. Edison, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, whose Post Office address is Llewellyn Park, West Orange, New Jersey, represents that on November 9, 1912 he filed an application for Letters Patent for an improvement in Processes and Apparatus for Coating Phonograph Records and Other Articles, Serial No. 730,343, which application was allowed November 19, 1915, but that he failed to make payment of the final fee within the time allowed by law. He now makes renewed application for Letters Patent for said invention, and prays that the original oath, drawing and specification may be used as a part of this application.

Signed at West Orange, Essex County, New Jersey  
this                      day of April, 1917.

x                      J. C. E.                      x

over

9-905

Dec. 6th, 1913.

Mr. Bachman:-

I made the following experiments on gold plating as per your request:

#1 - Gold anode (thin gold wire .020 thick) connected to one electrode and carbon anode to second electrode. Reversed primary current repeatedly while plating.  
Good coat of gold in 40 minutes.

#2 - Gold anode on one electrode and carbon anode on 2nd electrode. Adjusted current so that strongest discharge would be from carbon side.  
Good deposit of gold in 1 hour.

#3 - Gold anode on one electrode and nothing connected to 2nd electrode. Only small platinum loop on 2nd electrode exposed.  
Gold deposited in 1 hour.

On this same record, disconnected electrode lead wire from 2nd electrode and connected it to glass base plate of plating machine. No. good. Do not get any current thro gold electrode. Current discharges thro air exhaust tube leading to vacuum pump.

#4 - Gold anode on one electrode and covered platinum wire tip on 2nd electrode with glass cap to prevent platinum from plating.  
Good deposit of gold in one hour.

#5 - Gold anode on one electrode. Second electrode connected to metal stand supporting record.  
Good deposit in one hour.  
Gold deposits on metal stand.

These experiments show that both electrodes from the secondary of the induction coil must be exposed inside the vacuum jar to get a deposit, but the anode of the metal to be deposited need only be connected to one electrode.

*Mr. Bachman  
Legal Dept*

December 3, 1915

Mr. Edison:-

The applications herewith, which at the time of filing you wanted to "soak" in the Patent Office, have been allowed. These applications are:

Folio 905, which covers the apparatus and method of covering the disc master records with a coating of gold, the apparatus having electrodes arranged to produce a coating of substantially even thickness.

Folio 983, which covers the method and apparatus for loading the blank molds for the disc records with the powdered blank material, the molds being agitated by hammers arranged around their peripheries, and the tops of the molds being shaped by rotating scrapers.

Any one of the following things can now be done with these applications:-

1st: The patents may be taken out by the payment of the final fees.

2nd: The applications may be abandoned.

3rd: The applications may be forfeited for failure to pay the final fees within six months after allowance. After forfeiture, the applications are subject to renewal at any time within two years after the allowance of the original applications. Upon renewal, a second filing fee of \$15.00 must be paid for each application. By this means, the cases may be kept from abandonment in the Patent Office at least two years longer.

Please advise me with respect to each of these cases whether you wish the patent taken out, the application abandoned, or the application forfeited.

*do this -*  
*Frederick Bachman*



Folio No. 905

Thomas A. Edison

Process & Apparatus for Coating

Phonograph Record & Other Articles

Filed Nov. 9, 1912

Allowed Nov. 19, 1915

Final Fee due May 19, 1916.

Mr. Holden:

Any foreign applications?

*Backman* Should this application be assigned to N. J. Patent Co.?

When do you wish final fee to be paid?

J. UNGER

April 23, 1917

Mr. Edison:- FOLIO 905 - Serial No. 730,343, Processes and Apparatus for Coating Phonograph Records and Other Articles

FOLIO 983 - Serial No. 836,608, Method and Apparatus for the Production of Molded Articles

Folio 905 covers the apparatus and method of covering the disc master record with a coating of gold, the apparatus having electrodes arranged to produce a coating of substantially even thickness throughout the coated surface.

Folio 983 covers the method and apparatus for loading the blank molds for disc records with powdered material, the molds being agitated by hammers arranged around their peripheries, and the tops of the molds being shaped by rotating scrapers.

When these applications were originally filed, you wanted them to "soak" in the Patent Office. After allowance, the cases were forfeited under instructions from you; and the question of renewal now comes up. If you wish to have the cases renewed, will you please sign the attached petitions for renewal.

FB-JS

*Frederick Sachman*

*1123*

*Abandon  
Entirely  
10/19*

**Patent Series**

**Patent Application Files**

Folio # 906      Improvements in the Formation of Sound Records or the  
Like

Serial #:        732410

Primary Applicant: Edison, Thomas A

Date Executed: 11/19/1912

[PHOTOCOPY]

Serial No. 793, 410

Applicant. *Thomas A. Edison* Address. *Llewellyn Park  
West Orange, New Jersey*

*Improvements in the Formation of Sound Records on the Tinfoil*  
Title *Sound Records*

Filed *November 20, 1912* Examiner's Room No. \_\_\_\_\_

Assignee \_\_\_\_\_

Ass't Exec. \_\_\_\_\_ Recorded \_\_\_\_\_ Liber \_\_\_\_\_ Page \_\_\_\_\_

Patent No. \_\_\_\_\_ Issued \_\_\_\_\_

ACTIONS.

1. Office letter Dec. 16, 1912	16.	
2. Unrecorded Nov. 12, 1913	17.	
3. Rejected Feb. 6, 1914	18.	
4. Unrecorded Jan. 12, 1915	19.	Abandoned upon
5. Rejected Feb. 2, 1917	20.	Instructions from Mr.
6. Unrecorded Dec. 13, 1915	21.	Edison Oct. 15, 1916
7. Rejected Dec. 30, 1915	22.	
8. Unrecorded Dec. 7, 1916	23.	
9. Final Rejection Dec. 13, 1916	24.	
10. Unrecorded Power of atty to for a record Jan. 1, 1917	25.	
11. Unrecorded Jan. 31, 1917	26.	
12. Unrecorded Feb. 5, 1917	27.	
13. Power of atty for copy Feb. 11, 1917	28.	
14. Unrecorded Call at August 5, 1918	29.	
	30.	

*per*

*PRANK L. DYER,*  
Counsel,  
ORANGE, NEW JERSEY.

# Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey.

prays that letters patent may be granted to him for the improvements in

*The Formation of Sound Records or the Like*  
-SOUND RECORDS-

set forth in the annexed specification; and he hereby appoints Frank I. Dyer  
(Registration No. 560), of Orange, New Jersey, his attorney, with full  
power of substitution and revocation, to prosecute this application, to make  
alterations and amendments therein, to receive the patent, and to transact all  
business in the Patent Office connected therewith.

*Thos. A. Edison*

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in *The formation of Sound Records or the Like. 1/12/15*  
A SOUND RECORDS of which the following is a description:

My invention relates to sound records, *or the like 1/12/15* and more particularly to sound records of the flat or disc type having record undulations of the up and down or hill and dale type. The principal object of my invention is to provide an improved sound record, *as herein claimed* the invention comprising *an improved process for the formation of such records* improvements in the record itself and in the process and *in like articles 1/12/15* apparatus for manufacturing the same.

In some respects, my invention resembles that set forth in an application of Jonas W. Aylsworth, Serial No. 674,289, filed January 30, 1912, in that a base or backing is provided with a surface covering or veneer of suitable moldable material, the record impression being subsequently formed or printed in the said covering or veneer. The surface veneer is preferably first formed upon the smooth polished surface of a metallic plate or other blank mold and subsequently transferred under heat and pressure to the surface of the object to be coated, the surface veneer, when thus treated, adhering firmly to the said object. The base of the object to be coated is preferably formed of cresol or phenol resin or their equivalent mixed with wood flour or other suitable filling material and the surfacing material is preferably formed of a phenolic condensation product, such as the surfacing material referred to in the said application of Aylsworth, this surfacing material

*comprising preferably a fused, hardened, inflexible, plastic or other material, containing a plasticity ingredient whereby the same may*  
be rendered sufficiently plastic to take a record or other impression when sufficiently heated.

In order that my invention may be better understood, attention is hereby directed to the accompanying drawings forming a part of this specification and in which -

Fig. 1 represents a central vertical sectional view of one form of my improved apparatus for transferring a surface veneer to the base or backing of a record tablet;

Fig. 2 represents a sectional view taken on the line 2-2 of Fig. 1;

Fig. 3 represents a view similar to that shown in Fig. 1 of my improved apparatus for printing or impressing the record undulations into the coated tablet;

Fig. 4 represents a fragmentary plan view of a part of the apparatus disclosed in Fig. 3; and

Fig. 5 represents a detail view in section illustrating the method and means preferably employed by me for opening the mold forming part of the apparatus of Figs. 1 and 3.

In all of the views like parts are designated by the same reference numerals.

Referring to the drawings and more particularly to Figures 1 and 3, my improved apparatus for transferring the surface veneer to the body of the tablet and also that for impressing the record undulations in the coated tablet comprise a lower mold plate 1 provided with a horizontal disc shaped recess 2 in which fits a transfer plate 3, as shown in Fig. 1, or a sound record matrix 3', as shown in

Fig. 3, the apparatus of Figs. 1 and 3 being identical except that the matrix in the latter figure takes the place of the transfer plate in the former figure. The depth of the recess 2 is slightly less than the thickness of the matrix and transfer plate so that these parts extend a slight distance above the top of the said recess. In order that the matrix may contain an exact copy in reverse of the record undulations of the original master record, I form the same by first providing the master with a conducting coating by the process of electrodeposition described broadly in my United States patent No. 713,863 dated November 18, 1902 (and more specifically in my co-pending application, Serial No. 730,343, filed November 9, 1912 and then electroplating copper on this coating. The plate 1 is also provided with a horizontal annular surface 4 extending outwardly from the top of the vertical wall of the recess 2 to an inclined surface 5, a removable ring 6 being adapted to rest upon the surfaces 4 and 5. The inside of the ring 6 (See Fig. 5) is formed with a cylindrical surface 7 adapted to surround the transfer plate or matrix, a surface 8 inclined or tapered outwardly from the surface 7, and a second cylindrical surface 9 above the surface 8. The numeral 10 designates the top or upper plate of the mold, this part being provided with a cylindrical extension 11 which fits against the cylindrical surface 9 and is slidable axially thereon. In operation, the parts above referred to are adapted to be supported between platens 12, 12 provided with conduits or passages 13 whereby heating or cooling fluid may be passed through the same. Referring to Fig. 2, it will be seen that the conduits 13 bend back and forth in serpentine fashion and take up most of the interior of the platens so that the latter are effectively acted upon by the heating and cooling fluid passing



through the same. Suitable threaded connections 14, 14 may be formed at the ends of the conduits or passages 13 to permit the same to be connected respectively with an inlet <sup>pipe</sup> and an outlet pipe for steam and water or other heating and cooling fluids. A pipe 15 may also be placed around the mold plate 1 to circulate a cooling medium around the periphery of the same to hasten the cooling thereof. As shown in Fig. 4, the pipe 15 is located in a groove 16 around the plate 1 and adjacent terminal portions thereof are secured to each other by a metallic band 17.

In welding the surface venter to the base or backing, the presence of air between the two surfaces to be welded together renders it practically impossible to obtain a firm adhesion between the same. It has also been found that the presence of air between the matrix and the record tablet in the printing operation prevents the formation of an accurate record impression. In order to avoid these objections, I preferably construct both the transfer and the printing apparatus, shown in Figs. 1 and 3 respectively, so that a vacuum can be readily formed therein. To render the said apparatus air tight, I provide a ring 18 of rubber or other suitable yielding material of such a size that the same is adapted to fit closely against the peripheral portions of the plates 1 and 10 to close or seal the space between said plates, as clearly shown in Figs. 1 and 3. It will be seen that by reason of the yielding character of the ring 18, the plates 1 and 10 may be moved towards and away from each other a substantial distance without disturbing the vacuum between the same. To permit the ready extraction of air from the space between the plates 1 and 10, I provide a tubular connection 19 threaded into the plate 1 and communicating

at its inner end with a vertical opening 20, which in turn communicates with the space between the plates 1 and 10. A plug 20' may be threaded into the plate 1 to close the opening 20 below the connection 19. The outer end of the connection 19 is adapted to be connected with a suitable suction pump or any other air exhausting means whereby, after the plates 1 and 10 and the ring 18 are arranged as indicated in the drawing, air may be exhausted from the space between the same. The use of a vacuum in connection with the printing of the records is broadly no part of the present invention, but is the invention of Edward L. Aiken, and is disclosed and claimed in an application, Serial No. 726,425, filed by said Aiken on October 18, 1912.

As shown in Figs. 1, 3 and 5, the ring 6 is preferably provided with vertical threaded openings 21 in which keys 22 (See Fig. 5) are movable to permit opening of the mold, as will be hereinafter more fully explained.

In forming a sound record with the apparatus hereinbefore described, I first form a base or backing member 23 (See Fig. 1) of suitable material, such as the hereinbefore mentioned phenol or cresol resin loaded with a suitable filling material such as wood flour. <sup>A solution of ingredients which, when heated, form the hardened veneer formed of a phenolic condensation product containing plasticity agent, such as the surfacing material specified in the above named application of Aiken, is then flowed</sup>  
<sup>11/12/13</sup>  
~~in its unhardened condition~~ over the surface of the transfer plate 3 and coated uniformly thereon. This may conveniently be done by the apparatus disclosed in my co-pending applications, Serial Nos. 727,828 and 727,629 filed on October 26, 1912. <sup>Invent A 11/12/13</sup>  
The coating or veneer 24 on the transfer plate is then rendered hard and infusible by

application of heat, as described in the above mentioned application of Ayleworth, after which the transfer plate with the hardened veneer 23 thereon is placed in the recess 2 of the plate 1 and the base or backing 23 placed on top of the veneer in the transfer apparatus. The inner surface of the ring 6 and the periphery of the backing 23 are so formed that when the backing is placed within the ring in the transfer apparatus, it rests closely in contact with the veneer 24 and the inner surface of the ring 6. The ring 18 is then placed in position around the plates 1 and 10 and the air extracted from the space between the latter. Heat is simultaneously applied by the passage of steam through the passages 13 in the platens 12, 12 and after a sufficient amount of heating, pressure is applied to force the platens 12, 12 and the mold plates 1 and 10 together, the surface veneer being thus firmly welded to the base or backing by the heat and pressure applied there-  
and the lower surface of ring 6 rests to. It will be seen that as the surface 4 is located below the upper surface of the mold or transfer plate, the flow of stock or ~~residual~~ material between the plate 1 and the ring 6 and the consequent tendency of the said ring to be lifted with the base or backing 23 off the plate 1 and the veneer 24 is effectively prevented. Likewise, flow of the record composition between the ring 6 and the member 10 is effectively prevented by the comparatively close fit between these parts. In fact, with my improved process flow of the record composition is practically entirely eliminated; so that, if the density and thickness of the original tablet and veneer are uniform, the density of the coated tablet formed by my process and apparatus is likewise substantially uniform throughout and the said tablet may be readily pressed into uniform engagement with

the whole mold surface of a sound record matrix and thereby provided with a very accurate record impression. Before removing the coated tablet from the transfer apparatus, cooling fluid is passed through the passages 13 in the platens 12 and also through the pipe 16 until the said tablet has become sufficiently hardened, air being then admitted through the connection 19 after which the plates 1 and 10 and parts supported therein are removed from between the platens 12,12. In dis-assembling the apparatus for the removal of the coated tablet, I find that after the rubber ring 18 is removed and the mold plates and the parts supported therein inverted, the plate 1 may be readily lifted off said parts, but I find that the plate 10 frequently fits so tightly to the ring 6 as not to be readily movable therefrom by hand. In order to facilitate removal of said plate, I screw the keys 22 into the openings 21 and against the plate 10 until the latter is forced out of the ring. The coated blank and the transfer plate may then be readily removed from the ring 6 by hand.

I have found that where the record undulations are of the up and down or hill and dale type, the record tablet, when of disc form, should be of considerable weight; as the up and down movement of the stylus corresponding to the loud vibrations is apt to set the record into vibration, if the latter is made too light, and to thereby produce objectionable foreign sounds. The record tablet may be made of sufficient weight by loading the same with heavy filling material, such as various mineral oxides, or by making the same of considerable thickness. When the tablets are made of the record materials heretofore referred to, the tablet should be made at least 0.2 of an inch thick.

The thickness which I prefer to employ ranges between .2 and .25 of an inch.

The blank tablet<sup>11/15, 1/15</sup> having been formed as described above, the latter is placed in the molding apparatus as closed in Fig. 3, the mold closed, the air exhausted therefrom, the mold and its contents heated by means of the platens 12, 12 and the blank forced against the record matrix to receive a record impression from the matrix 3'; after which the mold is cooled and the parts separated in the manner similar to that described in connection with the transfer apparatus hereinbefore described. <sup>Serial C - 12/23/15</sup> In the record molding processes heretofore commonly employed with lateral cut records, it has been customary to force the record material to flow radially over the matrix towards the periphery of the record during the molding operation. Such flow of the record material over a matrix having record undulations of the up and down type would not only cause the thin walls between the record grooves of the matrix to become worn, but it would also prevent the escape of all the air between the matrix and the record composition and would thereby prevent a very accurate molding of the record. In my apparatus for printing, the ring 6, matrix 3' and plate 10 fit closely against and completely enclose the record tablet so that the flow of the record material across the walls between the record grooves in the matrix is practically eliminated, the life of the matrix prolonged, and a very accurate record impression obtained.

The record obtained as described above is found to be capable of reproducing with the highest accuracy the selections recorded upon the original master record, the overtones, which give to music its quality, being satisfactorily reproduced so that a very rich and pleasing repro-

suction is obtained. In examining the record under the microscope, I find that the same shows clearly the original chatter or tool marks made by the recording knife in the original master; and, in fact, I have found that the distinct appearance of these chatter marks in the record when the latter is placed under the microscope gives a very satisfactory indication that the weak over-tones, which are necessary for a perfect reproduction and which cannot be seen by the microscope or any other known means, are faithfully recorded in the record. I also find that if these chatter marks are removed that the said weak over-tones are likewise removed and the quality of the reproduction is accordingly made less perfect.

Having now described my invention, what I claim as new and desire to protect by Letters Patent of the United States is as follows:

1. The process of forming <sup>11/12/10</sup> record tablets which consists in ~~forming on~~ <sup>applying to</sup> a blank mold a ~~coating~~ <sup>layer</sup> of surfacing material, forming a base or backing of suitable composition, superposing said base or backing and said ~~coating~~ <sup>layer</sup>, exhausting the air from between the same, and pressing the same together with application of heat to cause the same to adhere firmly to each other, substantially as set forth.

2. The process of forming record tablets which consists in ~~forming on~~ <sup>applying to</sup> a blank mold a ~~coating~~ <sup>layer</sup> of surfacing material, forming a base or backing of suitable composition, superposing said base or backing and said ~~coating~~ <sup>layer</sup>, exhausting the air from between the same, pressing the same together with application of heat to cause the same to adhere firmly to each other, removing the ~~coated~~ <sup>layer</sup> tablet thus formed from the mold, and forming a sound record impression

*said layer 4/16*  
in the ~~coated surface thereof~~, substantially as set forth.

3. The process of forming record tablets which consists in forming on a polished surface of a blank mold plate a coating of surfacing material, forming a base or backing of suitable composition, superposing said base or backing and said coating, exhausting the air from between the same, and pressing the same together with application of heat to cause the same to adhere firmly to each other, substantially as set forth.

4. The process of forming record tablets which consists in forming on a blank mold a coating of surfacing material, forming a base or backing of suitable composition superposing said base or backing and said coating, exhausting the air from between the same, pressing the same together with application of heat to cause the same to adhere firmly to each other, removing the coated tablet thus formed from the mold, and pressing the same into a sound record mold with application of sufficient heat to cause the sound record undulations to be formed in the coated surface thereof, substantially as set forth.

5. The process of forming record tablets which consists in forming on a blank mold a coating of surfacing material, forming a base or backing of suitable composition superposing said base or backing and said coating, exhausting the air from between the same, pressing the same together with application of heat to cause the same to adhere firmly to each other, removing the coated tablet thus formed from the mold, placing the same in a sound record mold with the coated surface thereof in contact with the record surface of the mold, exhausting the air from between the said coated surface and the record surface of

the mold, and pressing the tablet into the mold with application of sufficient heat to cause the sound record undulations to be formed in the coating, substantially as set forth.

6. The process of forming record tablets, which consists in ~~forming on a blank mold~~ <sup>applying to the 11/18/18</sup> a ~~coating~~ <sup>layer 12/11/18</sup> of final hard phenolic condensation product which is infusible but somewhat plastic when heated, forming a base or backing of suitable composition, superposing said base or backing and said ~~coating~~ <sup>layer 12/11/18</sup>, exhausting the air from between the same, and pressing the same against each other with application of heat to cause the adhesion of the ~~coating~~ <sup>layer 12/11/18</sup> to the base or backing, substantially as set forth.

7. The process of forming record tablets which consists in forming on a ~~blank mold~~ <sup>11/12/18</sup> a coating of final hard phenolic condensation product which is infusible but somewhat plastic when heated, forming a base or backing containing cresol resin, superposing said base or backing and said coating, exhausting the air from between the same, pressing same against each other with application of heat to cause the adhesion of the coating to the base or backing, and removing the coated tablet thus formed from the mold, substantially as set forth.

~~Cancelled 11/21/17~~  
8. The process of forming record tablets which consists in ~~forming on a blank mold~~ <sup>applying to 12/11/18</sup> a ~~coating~~ <sup>layer 12/11/18</sup> of surfacing composition, forming a base or backing of suitable composition, superposing said base or backing and said ~~coating~~ <sup>layer 12/11/18</sup>, pressing the same together with application of heat to cause the firm adhesion of the ~~coating~~ <sup>layer 12/11/18</sup> to the base or backing while substantially preventing flow of said compositions,



and removing the <sup>(12-11-46)</sup>coated tablet thus formed from the mold, substantially as set forth.

9. The process of forming record tablets which consists in <sup>affixing 11/11/46</sup>forming on a blank mold a <sup>base 12/11/46</sup>coating of surfacing material, forming a base or backing of suitable composition, superposing said base or backing and said <sup>base 11/11/46</sup>coating, <sup>base 11/11/46</sup>exhausting the air from between the same, pressing the same together with application of heat to cause the firm adhesion of the <sup>base 11/11/46</sup>coating to the base or backing while substantially preventing flow of the <sup>base 11/11/46</sup>composition of the <sup>base 11/11/46</sup>coating and the base or backing, and removing the <sup>base 11/11/46</sup>coated tablet thus formed from the mold, substantially as set forth.

10. The process of forming record tablets which consists in forming on a blank mold a coating of surfacing material, forming a base or backing of suitable composition, superposing said base or backing and said coating, pressing the same together with application of heat to cause the firm adhesion of the coating to the base or backing while substantially preventing flow of the base or backing and the coating, removing the coated tablet thus formed from the mold, and pressing the same into a sound record matrix to form a record impression therein while preventing flow of the composition thereof across the walls between the record grooves in the matrix, substantially as set forth.

<sup>Cancelled 11/11/50</sup>  
11. The process of molding sound records which comprises <sup>pressing 11/11/46</sup>pressing a plastic blank record tablet into a sound record mold, <sup>matrix 11/11/46</sup>to cause the record impression to be formed therein without flow of the record composition across the walls between the record grooves in the mold, <sup>matrix 11/11/46</sup>

substantially as set forth.

12. The process of molding sound records which comprises pressing a plastic blank record tablet into a sound record mold to cause the record impression to be formed therein, ~~and preventing flow of the record composition~~ <sup>without 11/14/12</sup> transversely of the record grooves during the pressing operation, substantially as set forth.

<sup>Cancelled 11/12/13</sup>  
13. In apparatus of the class described, the combination of a mold or transfer plate having a polished mold surface, means for supporting said plate and pressing an article to be coated into contact with a coating on said plate, and means for rendering said first named means air tight, said first named means being provided with means whereby air may be exhausted therefrom, substantially as described.

14. In apparatus of the class described, the combination of a mold or transfer plate having a polished mold surface, and air tight means for supporting said plate and pressing an article to be coated into contact with a coating on said plate, said means being constructed to permit air to be exhausted therefrom, substantially as described.

15. In apparatus of the class described, the combination of mold members movable towards and away from each other, and means connected with one of said members for circulating fluid around the periphery thereof, substantially as described.

16. In apparatus of the class described, the combination of a plurality of mold members movable toward and away from each other and having a sliding telescopic

*Cancelled 11/12/10*

connection with each other, substantially as described.

17. In apparatus of the class described, a plurality of mold plates movable towards and away from each other, one of said plates having a central mold portion and a detachable ring surrounding said mold portion, substantially as described.

18. In apparatus of the class described, a plurality of plates movable towards and away from each other, one of said plates being provided with a seat for a mold and a detachable ring surrounding said seat, substantially as described.

19. As a new article of manufacture, a mold plate having a detachable ring surrounding the mold surface thereof, substantially as described.

20. As a new article of manufacture, a duplicate or molded disc sound record exhibiting under the microscope the original chatter-marks of the recording stylus, substantially as described.

*Invent B. Claims 11, 12, 13 and 14 11/12/10*  
*Invent C. Claim 15 11/13/10*

This specification signed and witnessed this 19<sup>th</sup> day of November 1912

Witnesseth:

Thos. A. Edison

1. Fredrick Bachmann
2. Mary J. Laidlaw

## Oath.

State of New Jersey } ss.,  
County of Essex }

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in SOUND RECORDS,

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Sworn to and subscribed before me this 19<sup>th</sup> day of November 1912

Thos. A. Edison

Mary J. Laidlaw

(Seal)

Notary Public.  
NOTARY PUBLIC, STATE OF NEW JERSEY.  
Commission Expires Sept. 5, 1917

732410

DIV. 23

Fig. 1

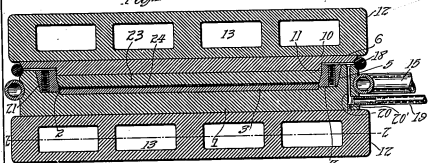
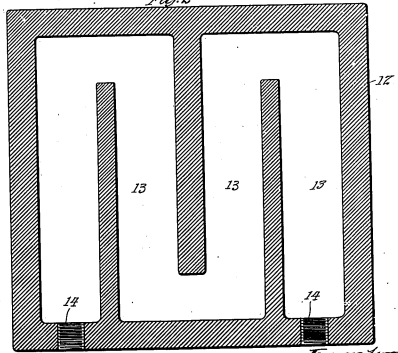


Fig. 2



Witnesses:

J. C. Brown

Frederick Jackson

Inventor:

Thomas A. Edison

By Francis L. Brown  
His Atty.

July 9/06

732410

2-2 DIV. 23

145  
100

Fig. 3

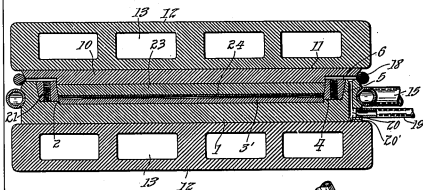


Fig. 5

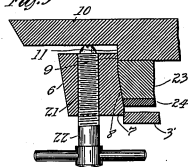
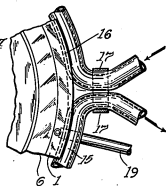


Fig. 4



Witnesses  
J. B. Brown  
Frederick Holman

Inventor:  
Thomas A. Brown  
By Thomas A. Brown  
J. B. Brown

Div. 23 Room 379

<sup>Admission only</sup>  
"The Commissioner of Patents,  
Washington, D. C."

J.H.D.-Sut.

2-280

Paper No. 11111 ✓  
All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Dec. 16, 1912.

Thomas A. Edison,  
Care Frank L. Dyer,  
Orange, N.J.

U. S. PATENT OFFICE,  
DEC 16 1912  
MAILED.

Please find below a communication from the EXAMINER in charge of your application.

#732,410, filed Nov. 20, 1912, for Sound Records.

6-5055

*E. B. Wilson*

Commissioner of Patents.

The subject matter of the last two lines of page 1 is *Amend*  
objected to as not a sufficient disclosure of the material used.  
Applicant must not rely on a pending application for his  
disclosure.

For similar reasons the subject matter of lines 12 and 13 *Revised from*  
page 3, is objected to as not a sufficient disclosure of the  
method employed.

Page 3, line 13, "by" should follow "then". Line 24, *See*  
"11" is wrongly connected on Figure 3. *Now*

Page 5, line 25, "a" should precede "plasticity". *See*

The subject matter of lines 21, 22 and 23, page 6, is  
objected to as not clearly expressed.

Page 8, line 3, "tablets" should be "tablet". Line 5,  
"2" should be "3".

Claims 1 to 12 inclusive are drawn to a process; claims  
13 to 19 inclusive are drawn to apparatus and claim 20 is drawn  
to a sound record. Division between these several groups of  
claims is required according to the provisions of rule 42.

Claim 12 is objectionable as "preventing flow", is not a  
separate step of the process.

In connection with claim 20, it should be noted that this

#732,410-----2 .

claim would be met by almost any record , especially a poorly recorded one where the chatter marks are likely to be prominent to the destruction of its usefulness.

In amending applicant should consult: Hoyt, Aug. 25, 1908, 897,254; Jones, June 20, 1904, 763,564, both in (18-48.4) ; Kaplan, April 8, 1902, 897,256; Cheney, Feb. 18, 1908, 879,383; Wickes, Nov. 23, 1909, 941,291, all in (18-5.3); Sanders, May 3, 1910, 956,904, (181-17), and Dengrandchamps, et al., French patent, 345,107, (181-16).

*As to vacuum and  
condition, see Appendix  
part. 11 or 4, 955 (Relation to  
apt. 1000.)  
See also Antenna app.  
mentioned on p. 5 of drawing*



IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
SOUND RECORDS, )  
Filed November 20, 1912, ) Room No. 379.  
Serial No. 732,410. )

HONORABLE COMMISSIONER OF PATENTS.

S I R:

In response to the Office action of December 16, 1912, please amend the above entitled case as follows:

In the first line on page 2, before "containing" insert - comprising preferably a final hardened, infusible, phenolic condensation product - .

In line 13, page 3, after "and" insert - by - .

In lines 23, 24, 25 and 26, page 5, cancel "surface veneer formed of a phenolic condensation product containing plasticity agent, such as the surfacing material specified in the above named application of Aylsworth" and insert in place thereof - solution of ingredients which, when heated, form the hardened phenolic condensation product hereinbefore mentioned - ; in line 27, same page, cancel "in its unhardened condition"; and in the second line from the bottom of the same page after the period (.) insert the following sentence: The ingredients referred

to may comprise a phenolic body, such as phenol resin, a hardening agent, such as hexa-methylene-tetra-amine, and a plasticity agent, such as penta-chloro-phenol in line 18, page 6, change "is" to - and the lower surface of ring 5 are - ; in line 20, same page, change "surfacing" to record - ; and in lines 21, 22 and 23, same page, cancel

"and the consequent tendency of the said ring to be lifted with the base or backing 23 off the plate 1 and the veneer 24".

In line 3, page 8, change "tablets" to - tablet -  
and in line 5, same page, change "2" to - 3 - .

In line 2, claim 1, cancel "blank".

In line 2, claim 5, cancel "blank".

In line 2, claim 7, cancel "blank".

In line 2, claim 8, cancel "blank".

In line 2, claim 9, cancel "blank".

In line 4, claim 12, change ", and preventing"  
to - without - .

Cancel claims 13 to 20 inclusive.

#### R E M A R K S

The Examiner is respectfully requested to change the lead line of the numeral 11 in Fig. 3 so that the said numeral will designate the cylindrical extension of the upper plate of the mold. This numeral is shown properly connected in Figure 1 of the drawings.

The matter of lines 12 and 13, page 3, will be suitably corrected before this application is passed to issue.

All of the claims now in this application are drawn to a single invention and action on their merits is accordingly respectfully requested. The right is reserved to file a divisional application on the subject-matter of the canceled claims.

Reconsideration and allowance are respectfully requested.

Orange, New Jersey,  
November 12, 1913.

Respectfully submitted,

THOMAS A. EDISON,

By Frank L. Myers  
his Attorney.

Div. 15 Room 308

*Address only*  
"The Commissioner of Patents,  
Washington, D. C.,  
and not any official by name."

2-200

H. D. B. Mo.

Paper No. 4

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

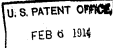
DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Feb. 6, 1914.

P. I. Dyer,

Orange,

New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

T. A. Edison, Serial No. 732,410, filed Nov. 20, 1912, for

Sound Records.

*Thomas Ewing*  
Commissioner of Patents.

6-5251

In response to the amendment filed Nov. 13, 1913:

The title, also the statement in line 12, page 1, should be revised to accord with the claims.

Claim 1 is rejected on the patent to

Bakeland, 939,966, Nov. 16, 1909, (18-60) page 2, lines 64-72, which shows the process consisting in forming on a mold a coating of surfacing material, forming a backing superposing thereon and pressing together with application of heat. To exhaust the air would not involve inventive difference particularly in view of

Aylsworth, 871,554, Nov. 19, 1907, (18-48.6).

Claims 3, 8 and 9 are rejected on the same reference. The "preventing" flow is a negative limitation.

Claims 11 and 12 are rejected, for instance, on the patent to

Petit, 689,118, Dec. 17, 1901, (18-48.6), Fig. 3, and page 2, lines 21-35. The steam presses equally over all portions of the surface of the blank, causing molding without transverse flow.

= 2,4-7, 10

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON,  
SOUND RECORDS,  
Filed November 20, 1912.  
Serial No. 732,410.

Room No. 379.

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to Office action of February 6, 1914, please amend the above entitled case as follows:

✓ In line 6, page 1, change "SOUND RECORDS" to  
- THE FORMATION OF SOUND RECORDS OR THE LIKE -; in line  
✓ 7, same page, after "records" insert - or the like -;  
in line 11, same page, after "invention" insert - herein  
claimed -; and re-write lines 12 and 13, same page to read  
✓ "an improved process for the formation of such records or  
like articles".

✓ In line 1, claim 1, cancel "record"; and in line  
3, same claim, after "composition" insert a comma.

Cancel claims 11 and 12 and insert the following  
new claims:

13  
11. The process of forming tablets which consists in coating a mold with a solution of surfacing material, forming a base or backing of suitable composition, superposing said base or backing and said coating, exhausting the air from between the same, and pressing the same together with application of heat to cause the same to firmly adhere to each other, substantially as set forth.

12. The process of forming tablets which consists in coating a mold with a solution of surfacing

material, hardening the coating thus formed, forming a base or backing of suitable composition, superposing said base or backing and said coating, exhausting the air from between the same, and pressing the same together with application of heat to cause the same to firmly adhere to each other, substantially as set forth.

<sup>12.</sup>  
12. The process of forming tablets which consists in forming a coherent veneer of phenolic condensation product, forming a base or backing of suitable composition, superposing said base or backing and said veneer, exhausting the air from between the same, and pressing the same together with application of heat to cause the same to adhere firmly to each other, substantially as set forth.

<sup>13.</sup>  
13. The process of forming tablets which consists in forming a coherent veneer of phenolic condensation product, forming a base or backing of phenolic condensation product, superposing said base or backing and said veneer, exhausting the air from between the same, and pressing the same together with application of heat to cause the same to adhere firmly to each other, substantially as set forth.

#### REMARKS .

It is thought that the patents to Aylsworth and Baskeland should not be combined to anticipate applicant's claims. Neither the patent to Aylsworth nor any other reference of record shows the step of exhausting the air from between a veneer and base or backing in connection with the

securing together of the veneer and the base or backing. Applicant has found that by this step, which is not shown in the references, it is possible to obtain a much securer welding together of the veneer and the base than has heretofore been obtainable, and it is accordingly thought that the claims which bring out this feature of the invention are clearly patentable.

Referring to the Examiner's objection to the expression "preventing flow of the composition", it is submitted that this language describes a positive portion of applicant's process and is not a mere negative limitation such as is objectionable in a claim.

The new claims presented herewith are thought to be patentable and necessary to fully protect applicant's invention. Claims 11 and 12 are thought to be allowable over the patents to Aylsworth and Bakeland for the reasons stated above and also because the said claims specify coating a mold with a solution whereas Bakeland coats his mold with "powdered" material.

Claims 13 and 14 are believed to be allowable over the patents to Bakeland and Aylsworth for the reasons set forth in the first paragraph of the remarks and also because said claims specify the formation of a "coherent" veneer prior to the welding together of the veneer and the base or backing.

For the above reasons, all of the claims are thought to be patentable and reconsideration and allowance are accordingly respectfully requested.

Respectfully,

THOMAS A. EDISON

By Frank R. Dyer

His Attorney

Orange, N. J.  
January 12, 1915

Div. 18, Room 308

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-260

H. D. B.

His.

Paper No. 5

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

Feb. 2, 1915

PATENT OFFICE

FEB 2 1915

MAILED.

Frank L. Joyce

Orange

New Jersey

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Hoyt, Serial No. 702,400, filed Nov. 20, 1912, for

Couch St. Co. Co.

44-2021

Thomas Ewing  
Commissioner of Patents.

In response to the amendment filed Jan. 13, 1915:

Claim 8 involves no step over and is rejected on the patent

to

Hoyt, 628,604, Aug. 14, 1906, (18-464) which discloses  
the process comprising applying to a heated mold a coat of molten  
surface composition, forming a backing of paper-pulch, for in-  
stance, and placing the mass on the surface composition, and press-  
ing together under heat, etc., page 1, lines 39 to 48.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

THE FORMATION OF SOUND  
RECORDS OF THE LIKE

Room No. 308.

Filed November 20, 1912

Serial No. 732,410

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
February 2, 1915, please amend the above entitled case as  
follows:-

Page 8, line 11, after the period insert the  
following sentence: - All references to the exhaustion of  
air from the mold are intended to apply to the production  
of any suitable partial vacuum in the mold. -

Add the following claim: -

15. The process of molding sound records which  
comprises superposing a blank record tablet and a sound  
record matrix, exhausting air from between said tablet and  
matrix, and pressing said tablet into said matrix to cause  
the record impression to be formed in said tablet without  
flow of the record composition across the walls between  
the record grooves in the matrix, substantially as set  
forth. -

REMARKS

It is thought that claim 8 is patentable over  
the patent to Hoyt. This claim specifies pressing the



base and coating together while substantially preventing flow of the compositions of which the base and coating are formed. In the patent to Hoyt there is shown in Figure 1 a substantial space between the periphery of the record and the mold, so that lateral flow of the record composition is not prevented.

The new claim presented herewith distinguishes from the references by specifying exhausting air from between the tablet and matrix and pressing the tablet into the matrix to cause the record impression to be formed in the tablet without flow of the record composition across the walls between the record grooves in the matrix.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Grant L. Dyer  
His Attorney

Orange, New Jersey  
December 23, 1915

FB-JS

DIV. 15, Room 308

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-200

H. D. B.

Mo.

Paper No. 8

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

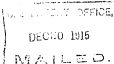
706

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Dec. 10, 1915

Frank J. Dyer,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 732,110, filed May 20, 1910, for  
Sound Records.

Thomas Ewing  
Commissioner of Patents

2-2001

In response to the amendment filed Dec. 24, 1915:

To mold a record there must be flowage of the surfacing  
composition. Whether the flowage be more or less depends upon  
the composition, the amount of heat, pressure, etc. At the  
most, it is merely a matter of degree. Claim 8 is rejected on  
Hoyt, of record.

Claim 15 is rejected on Aylsworth, of record.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

THE FORMATION OF SOUND  
RECORDS OR THE LIKE

Room No. 308.

Filed November 20, 1912

Serial No. 732,410

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
December 30, 1915, please amend the above entitled case as  
follows:-

Page 6, line 3, after "hardened" insert - layer  
or - . Line 5, after "of the" insert - layer or - .  
Line 9, before "veneer" insert - layer or - . Line 16,  
after "surface" insert - layer or - .

Claim 1, line 2, change "forming on" to - apply-  
ing to - . Same line, change "coating" to - layer - . Line  
3, change "coating" to - layer - .

Claim 2, line 2, change "forming on" to - apply-  
ing to - . Same line, change "coating" to - layer - .

Line 4, change "coating" to - layer - . Line 7, cancel  
"coated". Line 8, change "forme" to - formed - . Line  
9, change "coated surface thereof" to - said layer - .

Claim 6, line 2, change "forming on" to - apply-  
ing to - . Same line, change "coating" to - layer - .  
Line 6, change "coating" to - layer - . Line 8, change  
"coating" to - layer - .

Claim 8, line 2, change "forming on" to - applying to - . Same line, change "coating" to - layer - . Line 4, change "coating" to - layer - . Line 6, change "coating" to - layer - . Line 7, after "preventing" insert - lateral - . Line 8, cancel "coated".

Claim 9, line 2, change "forming on" to - applying to - . Same line, change "coating" to - layer - . Line 4, change "coating" to - layer - . Line 7, change "coating" to - layer - . Line 8, change "coating" to - layer - . Line 9, cancel "coated".

Claim 15, line 2, after "superposing a" insert - flat - .

#### R E M A R K S

Referring to claim 8, this claim does not specify the molding of a sound record, but merely the formation of a tablet. This claim now specifies "preventing lateral flow". With respect to the statement in the first paragraph of the last Office action, there is no necessity for permitting lateral flow of the composition, and there is a decided disadvantage in such flow in that it impairs the uniformity in the thickness and density of the record tablet. In the patent to Hoyt, there is a considerable space between the periphery of the blank and the mold, and accordingly, a chance for considerable lateral flow of the record composition.

With respect to claim 15, this claim distinguishes from Aylsworth in that it specifies a flat blank record tablet. The problem in connection with such a tablet is

very different from that in connection with a cylindrical record, and different forms of apparatus and different processes have been used for molding cylindrical records from those employed for molding disc records.

Reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By

Frank L. Dyer

His Attorney

Orange, N. J.

December 7, 1916

FB-JS

Div. 15. Room 308

2-280

Paper No. 10. 906

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

H. D. B.

All communications respecting this  
application should give the serial number,  
Mc. date of filing, title of invention, and  
name of the applicant.

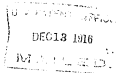
DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

Dec. 13, 1916.

Frank L. Dyer,

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 732,410, filed Nov. 20, 1912, for

Sound Records.

Thomas Edison  
Commissioner of Patents.

2-2831

In response to the amendment filed Dec. 8, 1916:

The amendments proposed would not relieve from the refer-  
ences of record.

A clear issue having been reached and the citation of fur-  
ther references not being required (*ex parte* Miller, 139 O. G.,  
730), this being a delayed case, in accordance with the Commis-  
sioner's order, the rejection of claims 8 and 15 is made final.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

IMPROVEMENTS IN THE FORMATION OF SOUND RECORDS  
OR THE LIKE

Filed November 20, 1912

Serial No. 722,410

HONORABLE COMMISSIONER OF PATENTS,

S I R :

I hereby constitute and appoint DYER &  
HOLDEN (Registration No. 3244), a firm composed of Frank L.  
Dyer and Delos Holden, whose address is Edison Office Build-  
ing, Orange, New Jersey, as my associates in the prosecution  
of the above entitled application, and request that all  
correspondence be addressed to them until further notice.

Respectfully,

Frank L. Dyer

Orange, N. J.

January 10, 1917.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

IMPROVEMENTS IN THE FORMATION  
OF SOUND RECORDS OR THE LIKE

Filed November 20, 1912

Room No. 308.

Serial No. 732,410

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of  
December 13, 1916, please amend the above entitled case as  
follows:-

Cancel claims 6 and 15 and change the numerals of  
the remaining claims to read consecutively.

In the amendment dated December 7, 1916, it was  
requested that in claim 1, line 3, "coating" be changed to  
- layer - . The word "coating" does not appear in line 3  
of said claim, and it was intended by said amendment to  
change the word "coating" to - layer - in line 4 of claim 1.  
Please enter the amendment in accordance with this correction.

R E M A R K S

This amendment places this case in condition for  
allowance, which action is respectfully requested.

Respectfully submitted,

THOMAS A. EDISON

By Dyer & Holden

His Attorneys

Orange, N. J.

Jan. 31, 1917

FE-JS



ADDRESS ONLY  
THE COMMISSIONER OF PATENTS,  
WASHINGTON, D. C.

AH 2-181

Serial No. 732,410

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON Feb. 5, 1917,

Thomas A. Edison,

Sir: Your APPLICATION for a patent for an IMPROVEMENT in  
Formation of Sound Records or the Like,

filed Nov. 20, 1912, has been examined and ALLOWED.  
The final fee, TWENTY DOLLARS, must be paid not later than  
SIX MONTHS from the date of this present notice of allowance.  
If the final fee be not paid within that period, the patent on  
this application will be withheld, unless renewed with an  
additional fee of \$15, under the provisions of Section 4897,  
Revised Statutes.

The office delivers patents upon the day of their date, and  
on which their term begins to run. The printing, photolitho-  
graphing, and engrossing of the several patent parts, prepara-  
tory to final signing and sealing, will require about four  
weeks, and such work will not be undertaken until after payment  
of the necessary fee.

When you send the final fee you will also send, DISTINCTLY  
AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVEN-  
TION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE  
(which is the date of this circular), DATE OF FILING, and, if  
assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an  
assignment containing a REQUEST to that effect, together with  
the FEE for recording the same, must be filed in this office on  
or before the date of payment of final fee.

After issue of the patent uncertified copies of the draw-  
ings and specifications may be purchased at the price of FIVE  
CENTS EACH. The money should accompany the order. Postage  
stamps will not be received.

Final fees will NOT be received from other than the appli-  
cant, his assignee or attorney, or a party in interest as shown  
by the records of the Patent Office.

Respectfully,

Thomas Ewing  
Commissioner of Patents.

Dyer & Holden,

Edison Office Bldg.,

Orange, N. J.

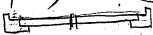
IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.

Legal Dept = Sept 2<sup>nd</sup> 1912, Lums  
Replied Sept 3/12

1<sup>st</sup> = fixing new reproducer so it does not  
swivel on the weight when used on the  
Victor machine. ~~filed~~

2<sup>nd</sup> Patent the process of forming veneers  
on plates by flowing the Varnish over  
the plate by hand or machine to obtain  
them free of air bubbles, drying, baking  
and transferring to blanks by heat  
+ pressure - also in Vacuum  
definite amounts of material used

3<sup>rd</sup> patent the transfer plate with  
a rim a part of the plate, also  
a removable rim. 

4<sup>th</sup> = patent cleaning the transfer  
plates by immersing in warm

alkali, which alone (as semi-handled)  
continues to act on it.

5<sup>th</sup> = Patent coating the original  
records with gold or metal like  
silver platinum not subject to  
Oxidation in a vacuum in such a  
manner that the metal will be  
evenly distributed over the whole  
surface of the record,

6<sup>th</sup> = What patents on new disc  
of every character, machines +  
material have been applied for  
in foreign countries - have we  
patented veneer of condensation + blank

7<sup>th</sup> patent pressing records in  
Vacuum -

8 = Patent numbering records on  
Edges -

9 = Patent a disc as a new article of  
mfr. The surface of which is so hardened  
that a new record may be pressed  
on it obliterating the previous record  
by heat & pressure. Want to catch  
them if importing - See 24  
273 <sup>disc</sup> <sup>material</sup>

10 = See if W. Aylsworth has patented  
the Cresal resin mixed with the paper  
pulp which we now make our  
pseudos blanks with -

11 = Have we patented the method  
result our label integral with  
records in center

12 = I understand all discs are made  
by using an ingot placing it on  
center of mould & forcing it to  
flow over the mould has anybody  
printed direct without flowing -

13 Patent impressing a record without  
any flow of the material & show the  
precautions we take to insure  
that there shall not be the  
slightest flow -

14 = All discs with lateral record  
can be & have been made light  
with the up & down cut & loud  
records it is necessary to have  
them heavy otherwise they  
themselves vibrate & produce  
undesirable results on loud  
tones we can load the blank  
with heavy oxides or make them thicker, patent 5

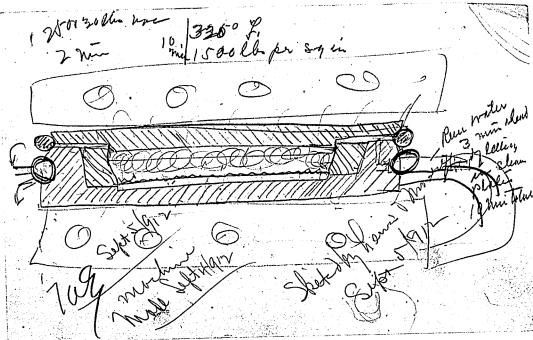
15 = patent a disc record the record being characterized by exhibiting the original chatter marks of the recording knife to insure that the <sup>weak</sup> overtones will be properly reproduced as they cannot be seen by the microscope or any other known means

16 = Did we patent our #60. steel disc Machine the ~~horn~~ swinging in its center -

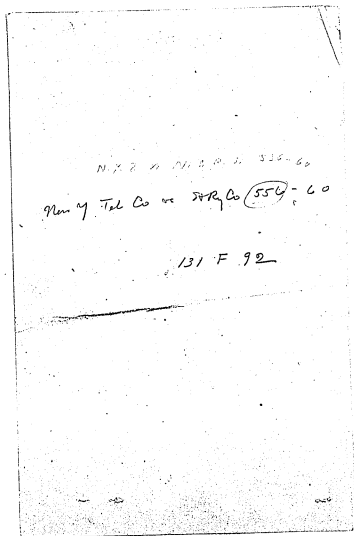
17 = patent dyeing Celluloid cylinders for phonograph records by dissolving the dye in alcohol or acetone & then adding sufficient water to prevent the Camphor in the Celluloid going into solution I will explain - dipping & washing dyeing

18 = patent a celluloid blank with its surface containing all the defects of manufacturing removed by abrasion or turning - to obtain a record free of surface sounds when the record is impressed thereon -

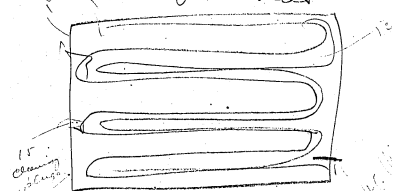
TAC



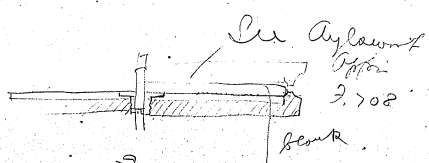
[ON BACK OF PREVIOUS DOCUMENT]



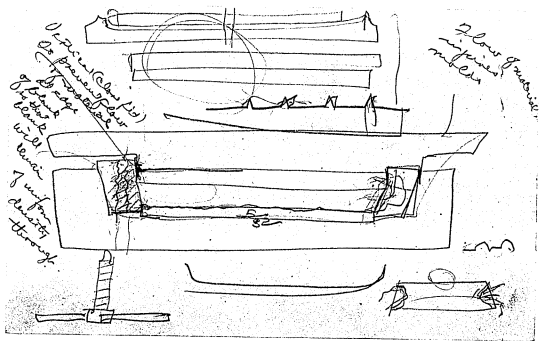
Section of Bladders  
for tires



for commercial  
molding



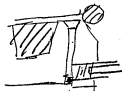
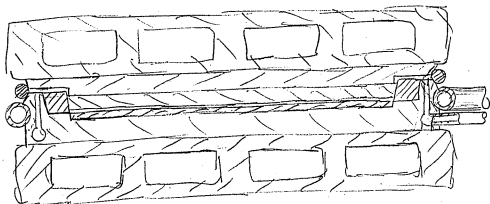
for  
substrate  
app for  
transforming  
molding





[ON BACK OF PREVIOUS DOCUMENT]

Commercial is at least  
1/2" - 250 "  
in thickness.

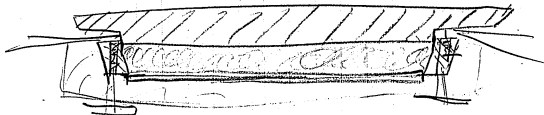


Sept 20/12

BRANSONVILLE, MISSISSIPPI, A. BRANSON

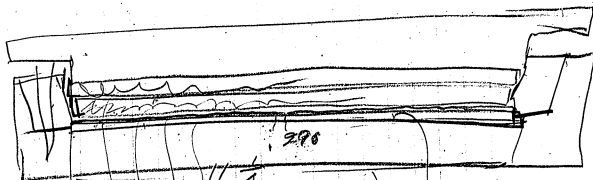
SEP 20 1912

11-6-12



Mounting

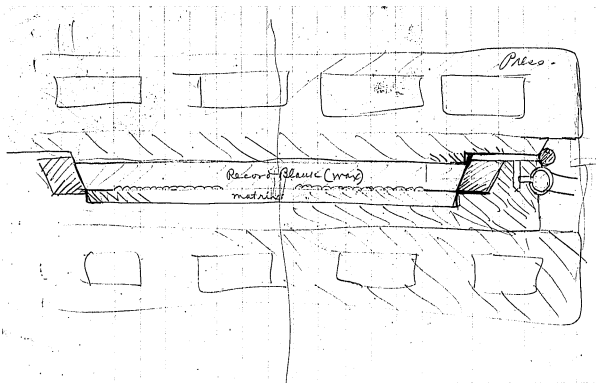
11-6-12



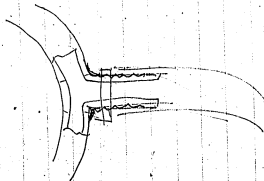
Sample 1 2  
3 4  
5 6

11-6-12

11-6-12

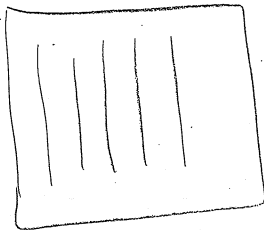


41.0  
21.0

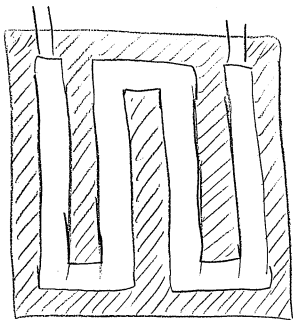


Form W-01M, 8-30.

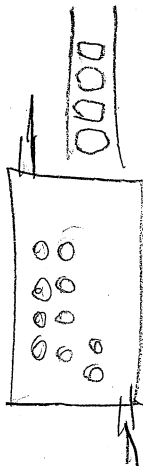
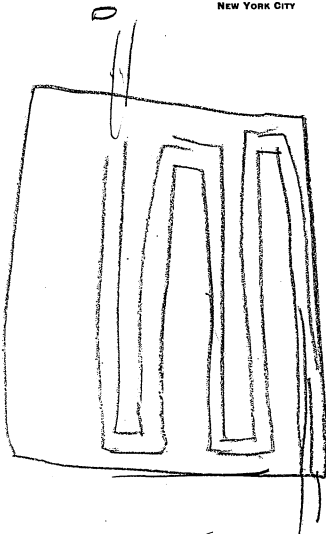
**MOTION PICTURE PATENTS COMPANY**  
80 FIFTH AVENUE  
NEW YORK CITY



NOTION PICTURE PATENTS COMPANY  
20 FIFTH AVENUE  
NEW YORK CITY

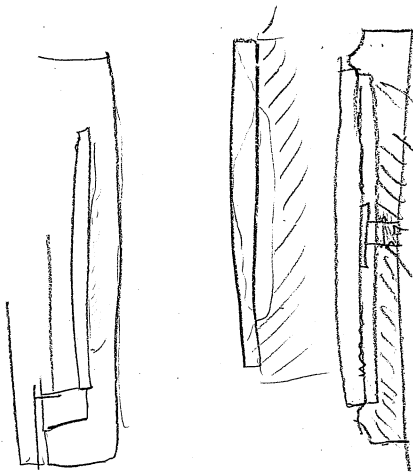


**MOTION PICTURE PATENTS COMPANY**  
80 FIFTH AVENUE  
NEW YORK CITY

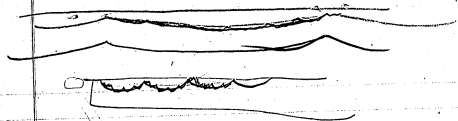


Form 85-105M, 2-10.

**MOTION PICTURE PATENTS COMPANY**  
80 FIFTH AVENUE  
NEW YORK CITY







Phonograph

- App's from Mr. Eli's List
- (a) Transferring messages to blanks in vacuo. (v)
  - (b) Pressing records in vacuo (v)
  - (c) Pressing rec. with softening fluid <sup>promotes flow</sup> & shows precaution <sup>to avoid flow</sup> (v)
  - (d) ~~Record~~ <sup>Records to make tracks, a great</sup> ~~bold molding for~~ <sup>distinction</sup>
  - (e) Record with ~~hardening~~ <sup>recording</sup> ~~electromagnetic~~ <sup>recording</sup> ~~recording~~ <sup>recording</sup> ~~recording~~ <sup>recording</sup>
- ~~Good molding for discs.~~

Because he does not buff or smooth

*Re: Reexamination  
forfeit, but then  
at the 12 years  
will be made if we  
will take it out*  
*Heard* *with undeniable*  
*E.*

Mr. Edison:-

FOLIO 906

March 21, 1917

This application relates to sound record tablets and covers the process of applying to a mold a layer of surfacing material, placing a backing on said layer, exhausting the air from between the backing and layer, and pressing the layer and backing together with application of heat to cause them to adhere firmly to each other. The apparatus employed is arranged to prevent flow of the base and the surface layer. In compliance with a requirement for division, all the claims in the case are limited to the process, original claims 13 to 20 on the apparatus and on a new article of manufacture having been cancelled.

When this application was filed, you asked me to let it "soak" in the Patent Office. It has now been allowed and I should like to have you advise me whether or not to permit the same to become forfeited for failure to pay the final fee, or to take out the patent. If the application is forfeited, we can renew the same within two years by the payment of a new filing fee of \$15.00.

~~If you wish the patent taken out,~~ Please <sup>also</sup> advise me if you wish divisional applications filed on the apparatus and article.

FB-JS

*Frederick Packman*

*See High v. Univ. of Wis. - 219 9, 847, 857  
and Packman's report of Com. re division. Power  
of app. 8 Under, should be, 13.  
They go in one case.*

CYLINDER RECORD MFG. DIVISION.

March 24, 1917.

Mr. Thomas A. Edison.

Dear Sir:-

This refers to the Disc Record and is of no  
value to the Cylinder Record.

W. F. Mehr.

Folio 906  
Thomas A. Edison  
Formation of Sound Records or the Like  
Ser. No. 632,410  
Filed Nov. 20, 1912  
Allowed Feb. 5, 1917  
Final Fee Due August 5, 1917.

*Edison*

Mr. Holden:

Any foreign applications? *No.*

Any divisional applications?

This case has not been assigned. Should it be assigned  
to New Jersey Patent Co? *Yes*

When do you wish final fee paid? *July 1/17*

J. UNGER.

October 11, 1918

Mr. Thomas A. Edison:-

FOLIO 906

The attached application was allowed February 5, 1917 and was forfeited in accordance with directions given by you. The question arises as to whether we shall renew the application or abandon the same. Will you kindly read the attached memorandum dated March 21, 1917 addressed to you, and advise what you wish done with the application.

WH-JS

*William A. Hardy*

*Abandon it*

*WAG*

**Patent Series**  
**Patent Application Files**

Folio # 915      Means for Recording Sounds

U.S. Patent #: 1286259

Primary Applicant: Edison, Thomas A

Date Executed: 2/28/1913

fig 1

0.15  
1/2 in  
1/2 in  
1/2 in

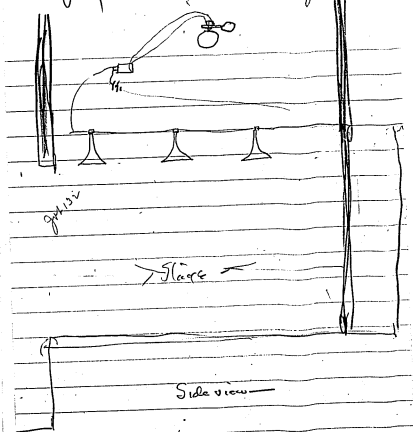


fig 2

Production Coil -

0.15  
1/2 in  
1/2 in  
1/2 in

0.15

1/2 in

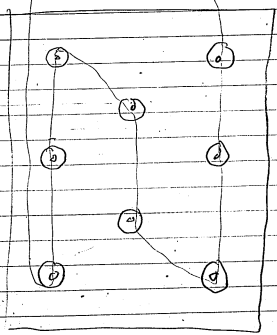
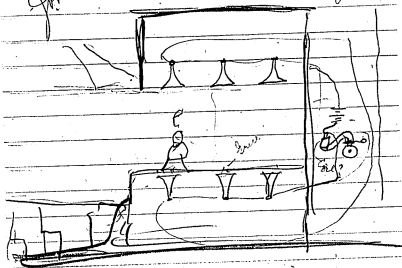


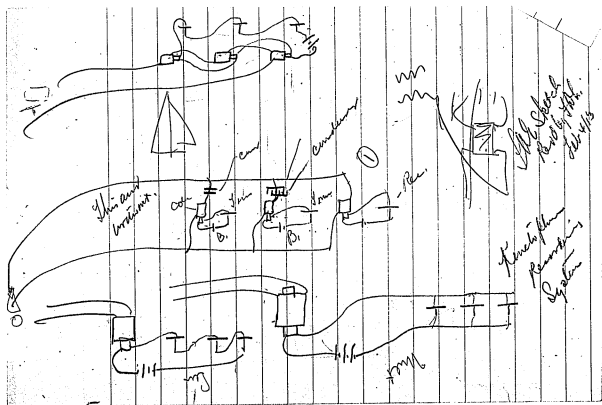
fig 3

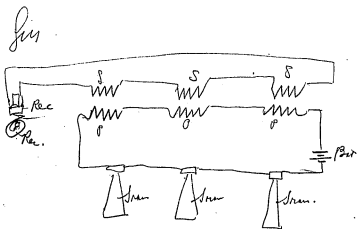
Sketch  
Perspective  
for Kneels Plate  
of 11. 8/1913

Jan 132



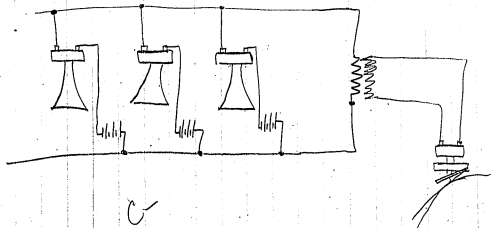






F

Transmitters connected in multiple  
with separate battery



- Lap -

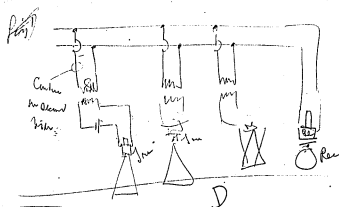
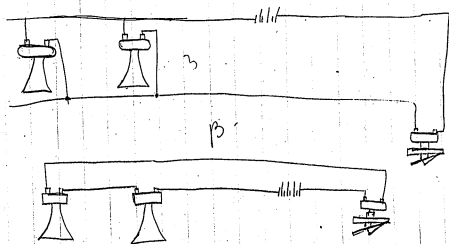


Fig 2

F



Without induction coil  
a-



**Patent Series**

**Patent Application Files**

Folio # 916      Phonographs or Talking Machines

Serial #:            752276

Primary Applicant: Edison, Thomas A

Date Executed:    2/28/1913

[PHOTOCOPY]

Patent No. 916

Serial No. 752,276

Applicant.

Address.

Thomas A. Edison Edison Park  
West Orange, N. J.

Title Phonograph or  
Talking Machines

Filed March 6 - 1913 Examiner's Room No. \_\_\_\_\_

Assignee \_\_\_\_\_

Ass't Exec. \_\_\_\_\_ Recorded \_\_\_\_\_ Liber \_\_\_\_\_ Page \_\_\_\_\_

Patent No. Edison Edison

ACTIONS.

1. Rejected April 10, 1913 16  
2. Amended Apr 8 - 1914 17  
3. Rejected May 16 - 1915 18  
4. Amended May 5, 1915 19  
5. Rejected May 20, 1916 20  
6. Amended May 13, 1916 21  
7. Rejected May 20, 1916 22  
8. Amended May 15, 1917 23  
9. Final Rejection May 23, 1917 24  
10. \_\_\_\_\_ 25  
11. \_\_\_\_\_ 26  
12. \_\_\_\_\_ 27  
13. \_\_\_\_\_ 28  
14. \_\_\_\_\_ 29  
15. \_\_\_\_\_ 30

DYER & HOLDEN,  
ORANGE, NEW JERSEY.

# Petition.

To the Commissioner of Patents:

Your Petitioner

THOMAS A. EDISON

a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

*Photographs on* TALKING MACHINES

set forth in the annexed specification; and he hereby appoints Dyer & Holden, (Registration No. 3244), a firm composed of Frank L. Dyer and Belos Holden, whose address is Edison Office Building, Orange, New Jersey, his attorneys with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

*Thos. A. Edison*



## SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in TALKING MACHINES, of which the following is a description:-

My invention relates to talking machines and more particularly to talking machines of the disc type in which the reproducer is fed across the record surface by the action of the reproducer stylus and the record groove.

One of the objects of my invention is to provide an improved construction whereby reproducers adapted to operate upon sound records having record grooves of the up and down or hill and dale type, and especially reproducers provided with floating weights carrying the stylus, are adapted to be fed across the record surface in this manner. Another object of my invention is to provide an improved arrangement and construction of the parts of a talking machine and the casing or cabinet therefor. A further object of the invention resides in the provision of improved means for controlling the movement of the stylus into and out of operative position with respect to the record. A still further object of my invention is to provide an improved attachment which may be readily applied to talking machines designed for playing records having grooves of the lateral type, to adapt these machines for playing rec-

ords having grooves of the hill and dale type. Other objects of my invention will appear more fully in the following description and appended claims.

More specifically described, my invention comprises a continuous amplifier, free from flexible joints, from the small end of which is preferably pivotally supported a sound conveyor for movement in a single plane only; the sound conveyor being provided at its free end with a reproducer, the sound box of which is rigidly connected therewith. The reproducer is preferably provided with the usual floating weight and in general is preferably of the construction disclosed in my pending application *Patent No. 1,085,421, 11/14/13* granted to me on March 11, 1913, *Serial No. 627,052, filed May 10, 1911*, and entitled Reproducers. In order to control the movement of the stylus into and out of engagement with the record, however, I provide the reproducer with means which is preferably mounted on the sound box and is movable to raise and lower the floating weight. In the enclosed horn type of machine, the major portion of the amplifier is preferably located and fixed within the casing or cabinet, the interior of which is in free communication with the surrounding atmosphere, and the smaller portion of the amplifier is located above the casing, whereby the sound conveyor with the reproducer is pivotally supported for horizontal movement across the record support. The record support or table is driven in a well known manner from a motor preferably located within the casing. The large and small portions of the amplifier are secured together and are preferably integrally formed.

It has heretofore been considered essential in order to obtain best results in the enclosed horn type of

*Monograph on 5-5-15*

talking machines to make that part of the cabinet in which the major portion of the amplifier is located a substantially sound-proof compartment. I have found, however, that better results are obtained by the open casing for the amplifier, which I provide. When a closed compartment is provided for the major portion of the amplifier, the walls of the compartment throw back the vibrations set up in the air surrounding the amplifier and tend to vibrate the walls of the amplifier in opposition to the vibrations set up therein by the sound waves passing therethrough from the reproducer. This results in the issuance of impure and unpleasant tones from the mouth of the amplifier. I have also found that the sound-proof compartment forms a resonating chamber which acts to augment the lower notes out of all proportion to the augmentation of the higher notes, thereby imparting to the reproduction of sound an effect which may be termed "cabinet tone". By the employment of the compartment having free communication with the surrounding atmosphere, these disadvantages are obviated and at the same time I am enabled to obtain an apparatus which is neat and pleasing in appearance.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawings forming a part of this specification, in which the same reference characters are used to designate corresponding parts throughout, and in which:

*Monograph on 5-5-15*

Figure 1 is a top plan view of a talking machine of the enclosed horn type in accordance with my invention;

Figure 2 is a front elevation of the apparatus of Figure 1;

Figure 3 is a sectional view on line 3--3 of Figure 1, parts being shown in elevation;

Figure 4 is an enlarged view of the reproducer on line 4--4 of Figure 3 looking in the direction of the arrows;

Figure 5 is an enlarged view in side elevation, partly in section, of the reproducer;

Figure 6 is an enlarged sectional view on line 6--6 of Figure 1, showing the construction of the connection between the sound conveyor and the small end of the amplifier;

Figure 7 is a section on line 7--7 of Figure 6;

Figure 8 is a fragmentary view similar to Figure 3 and showing a slightly modified form of amplifier; and

Figure 9 is a view in side elevation, partly in section, of a talking machine of the horn type in accordance with my invention.

Referring to Figures 1 to 7, reference character 1 represents the cabinet or casing of my improved talking machine which is provided with a top shelf or framework 2. The shelf 2 serves as a support for the bed plate 3 of the frame of the talking machine, in which bed plate is rotatably mounted the usual spindle 4 carrying at its upper end the record support or turntable 5 for the record 6. Suitably supported from the under side of the bed plate 3, as by means of bracket 6', is a suitable motor 7, which, by means of suitable gearing, preferably spiral gear<sup>ing</sup> 8, serves to drive spindle 4 and the usual governor 9. Bracket 6' is preferably provided at its lower end with a step bearing 4' for spindle 4.

Reference character 10 represents the bottom of, or a horizontal partition in, the cabinet 1 between which and

the shelf 2 a compartment 11 is formed. In order to give a neat and pleasing appearance to the apparatus, the operating means of the talking machine and the major portion of the amplifier or horn are preferably located within compartment 11. In order to establish free communication between compartment 11 and the atmosphere surrounding the cabinet, so as to obviate the disadvantages indicated above resulting from the use of a substantially sound-proof cabinet, I preferably provide the rear wall of the compartment with a large opening 12 and provide shelf 2, forming the top wall of the compartment, with outaway portions such as slot 12' and opening 13. Of course, the walls of the compartment may be apertured in any other desired manner. Reference character 14 represents the amplifier which is provided at its mouth with a flange 15, this flange being suitably secured, as by means of screws 16, about an opening 17 in the front wall of compartment 11. The amplifier or horn 14 extends rearwardly below the motor 7 from opening 17 substantially in a horizontal direction and thence upwardly through opening 13 in the shelf 2. Directly above shelf 2 the horn is provided with a flange 18, preferably formed integrally therewith. For the purpose of additionally supporting the horn and giving a neat appearance to the top of the cabinet, I provide a grill 19 of a size to fit opening 13 and which is preferably provided with a slot 20 and openings 21. After the horn is secured in the position shown in Figure 1, grill 19 is inserted through opening 12 in the rear of the cabinet and pushed into place in the opening 13, as shown in Figures 1 to 3, with the top thereof in engagement with the bottom of flange 18. In order to hold the grill in the position shown, I provide

32 4/8/40

suitable means, such as a supporting frame 21, preferably formed from angle iron, which may be inserted through aperture 12 and secured to the casing in the position shown in Figure 3 by any suitable means (not shown) with the upper face of its horizontal flange in contact with the lower surface of the grill 19. The axis of the major portion of the horn or amplifier is preferably in a single and substantially vertical plane. In the form of the invention shown in Figure 1, the horn is continuous with the smaller portion thereof above shelf 2 formed integrally with the major portion in compartment 11. As shown in this figure, the horn extends vertically for a short distance above flange 18 and is then bent to extend substantially at right angles to the major portion thereof and transversely of the cabinet substantially parallel to the front and rear thereof. This smaller portion of the horn is bent on itself, whereby the two substantially straight sections 23 and 24 are formed. The axes of the straight sections 23 and 24 are preferably located in a single vertical plane substantially at right angles to the vertical plane of the axis of the major portion of the amplifier. In order to economize space and to properly locate the small end of the horn, section 23 is inclined away from the horizontal and section 24 is inclined towards the horizontal, as clearly shown in Figure 2. Sections 23 and 24 are preferably secured together at 25, where they most nearly approach each other, in any suitable manner, as by soldering, so as to render the amplifier more rigid. Section 24 of the amplifier extends some distance to the right of the median vertical plane from the front to the rear of the cabinet and is bent adjacent its end to form the short forwardly projecting portion 26.

A preferably non-tapering sound conveying tube 27, carrying at one end the reproducer, is connected at its other end to the forwardly projecting portion 26, forming the small end of the horn or amplifier 14, by means of a pivotal connection 28. Sound conveying tube 27 is preferably wholly supported from the small end of the amplifier and for movement in substantially a horizontal plane only.

The pivotal connection 28 is preferably formed as follows: On the end of portion 26 of the amplifier and preferably formed integrally therewith is a hollow vertical cylindrical casing 29 and on the adjacent end of tube 27, also preferably formed integrally therewith, is a hollow cylindrical casing 30. The casing 29 is in communication with the bore of portion 26 and is provided with a outaway portion 29'. The bore of tube 27 extends through cylindrical casing 30 and is flared at the end, as at 27'. The cylindrical casing 30 is preferably of such size as to fit snugly within casing 29 and is held in place within the latter by means of screws 31 which pass through the top and bottom of casing 29 and have tapered ends engaging in recesses in the top and bottom of casing 30. The screws 31 may be adjusted to any desired position and held in place by lock nuts 31'. Casing 30 is provided with suitable stops such as screws 32 which coast with the walls 33 of the outaway portion 29' of casing 29 to limit the horizontal swinging movement of tube 27. By providing the bore of tube 27 with the flaring end 27', the area of the passage between tube 27 and portion 26, when tube 27 is at either limit of its swinging movement, is but very little less than the cross sectional area of the bores in the main parts of members 27 and 26.

Reference character 34 represents the reproducer which is carried by the free end of sound conveying tube 27 and the construction of which, with the exception of the means for controlling the movement of the stylus into and out of operative position, is practically the same as that disclosed in my pending application referred to above. The sound box 35 of the reproducer is provided with the usual diaphragm (not shown) and is integral with or otherwise fixed to the sound conveying tube 27 with the diaphragm in a horizontal position. The extension 36 of the sound box supports the floating weight 37 by a connection including the leaf-spring 38. Floating weight 37 is provided with spaced bearings 39 between which the stylus lever 40, provided with stylus 41, is pivotally mounted. The tail of the stylus lever 40 is connected by suitable means, such as a cord 42, to the reproducer diaphragm.

I will now describe the means for controlling the movement of the stylus into and out of operative position. Reference character 43 represents a suitable finger-piece, preferably consisting of a knurled or milled circular member having a hub 44 pivotally mounted on a suitable member, such as a pin or screw 45, secured to sound box 35. Hub 44 is provided with an extension 46, preferably formed integrally therewith, and this extension is formed with a cam surface adapted to coast with a pin 47 secured to the floating weight 37. Extension 46 is also provided with a recess 48, the end walls of which coast with a suitable stop 49 secured to sound box 35 to limit the pivotal movement of member 43 on 45. It will be apparent that on moving finger-piece 43 so as to turn extension 46 to the right, from the position shown in Figure 4, the cam surface



of the extension will coast with pin 47 secured to floating weight 37 to raise the latter and thereby stylus 41 from operative position with respect to the sound record. It will also be obvious that in order to provide for the return of the stylus to operative position, finger-piece 43 is simply turned to the left until pin 49 abuts or approaches the shoulder at the right hand end of recess 48, as shown in Figure 4, whereupon gravity and spring 38 will act to move floating weight 37 and thereby stylus 41 downwardly into operative position. Hub 44 preferably fits tightly on the shank of pin or screw 45. In order to insure, however, that member 43 will be held in any position to which it is turned, I provide a spring 50 between the head of the screw 45 and the bottom of a recess in member 43, provided for the reception of the screw head, whereby the end of hub 44 is held in tight frictional engagement with sound box 35, as will be apparent from an inspection of Figure 5.

Amplifier 14, sound conveying tube 27 and the reproducer 34 of the apparatus shown in Figures 1 to 3 may be made as an attachment capable of being readily substituted for certain parts of <sup>phonograph or S-S-11</sup> talking machines of the enclosed 2-horn type designed to play records of the lateral groove type to adapt these machines for playing records of the up and down or hill and dale type. In order to apply the attachment to such a machine, it may be necessary to provide the casing of the same with openings in the back and top corresponding to openings 12 and 13 in the casing 1 as shown in Figure 3. It will, of course, be understood that sound conveying tube 27 may be attached to the small end portion 26 of amplifier 14 after the latter is secured in place in the casing or cabinet 1.

It is some times desirable to make the major portion of the amplifier and the smaller portion thereof separately. For example, such a construction may render the assembling of the machine more convenient. I have shown such a construction in Figure 8 wherein the major portion of the amplifier is shown within casing 1 with its smaller end extending through opening 13 in the shelf 2. Just above shelf 2 the major portion 14' of the amplifier is provided with flange 18 which rests on grill 19 supported by frame 22, as shown in Figures 1 and 3. The major portion of the amplifier extends only a short distance above flange 18 to form a guiding portion 60. The smaller section 14" of the amplifier is substantially the same as shown in Figures 1 to 3, except that it is not integral with the major portion 14'. The larger end of the smaller amplifier section 14" fits over guiding portion 60 and is provided with a horizontal flange 61 engaging flange 18. The major and smaller portions of the amplifier are secured together in any suitable manner, as by screws 62 joining flanges 61 and 18.

In adapting machines of the enclosed horn type which are designed to play records of the lateral groove type for playing records ~~for playing records~~ having grooves of the up and down type, it may be unnecessary to remove the major portion of the amplifier within the cabinet. In such a case, reference character 14' (Figure 8) would represent the major portion of the amplifier of the original machine and the attachment which it would be necessary to apply would comprise only the smaller portion 14" of the amplifier, sound conveying tube 27 and reproducer 34.

Referring to Figure 9, which illustrates my invention as embodied in talking machines of the horn type, <sup>5-5-15</sup>

reference character 70 represents the cabinet of the machine above which the rotatable turntable or record support 5 is suitably supported. Turntable 5 is driven in any suitable manner preferably by a motor (not shown) located within the cabinet or casing 70. Reference character 72 represents a bracket which is suitably secured to cabinet 70 as by screws 73 and which serves as a support for the amplifier and the sound conveying tube 27 and the reproducer 34 carried thereby. While the amplifier may, if desired, be a one piece member, I prefer in this type of machine to form the larger and smaller portions thereof separately. Accordingly, the upper end of bracket 72 is provided with a flanged ring 75 to which the large bell-like portion 14''' is secured in fixed position by a clamping member 76 suitably secured to the upper end of bracket 72 as by a screw 77. The bell portion 14''' is preferably secured in place with its axis located in a vertical <sup>plane</sup> ~~plane~~ passing centrally of the cabinet from the front to the rear thereof. The smaller portion of the amplifier, which is bent on itself, is generally of the same construction as shown in Figures 1 to 3 except that the larger and thereof is preferably provided with a socket portion 78 adapted to fit over ring 75. The smaller portion of the amplifier is secured to ring 75 in any suitable way, as by screws 79, with the larger section 23' thereof above the smaller section 24'. The axes of sections 23' and 24' are preferably located in a vertical plane at right angles to the plane in which the axis of bell portion 14''' is located. Sound conveying tube 27 carrying reproducer 34 is pivotally secured to the small end portion 26 of the amplifier at 28 as in the form shown in Figures 1 to 3. Parts 14''', 23', 24', 26, 27 and 34

of Figure 9 may be made as a separate attachment or attachments capable of substitution for certain parts in talking machines of the horn type designed to play records of the lateral groove type to adapt these machines for playing records of the hill and dale type. In certain cases where the horn of the original machine may be used, the attachment will comprise only the smaller section of the amplifier (comprising parts 23', 24' and 26), conveyor 27, and reproducer 34.

While I have disclosed the nature of my invention by the illustration and description of several preferred forms, it is to be understood, of course, that my invention may be embodied in many modifications without any departure from the spirit and scope thereof.

Having now fully described my invention, what I claim and desire to protect by Letters Patent of the United States is as follows:

*Cancelled 4/1/44*  
1. In a talking machine, a casing, a fixed continuous amplifier partly within and partly above said casing, a sound conveyor pivotally connected with and wholly supported from the small end of said amplifier, and a reproducer rigidly connected with said sound conveyor, substantially as described.

2. In a talking machine, a casing, an amplifier partly within and partly above said casing, a sound conveyor pivotally connected with the small end of the amplifier for horizontal movement only, and a reproducer rigidly secured to said sound conveyor, substantially as described.

3. In a talking machine, a casing, a fixed continuous amplifier partly within and partly above said casing, a sound conveyor pivotally connected with the small end of the amplifier for horizontal movement only, and a reproducer rigidly secured to said sound conveyor, substantially as described.

4. In a talking machine, a casing, an amplifier partly within and partly above said casing, a sound conveyor pivotally connected with the small end of the amplifier for horizontal movement only, said sound conveyor being wholly supported by said amplifier, and a reproducer rigidly secured to said sound conveyor, substantially as described.

5. In a talking machine, a casing, a fixed continuous amplifier partly within and partly above said casing, a sound conveyor pivotally connected with the small end of the amplifier for horizontal movement only, said sound conveyor being wholly supported by said amplifier, and a reproducer rigidly secured to said sound conveyor, substantially as described.

6. In a talking machine, a continuous amplifier without flexible joint, a sound conveyor pivotally connected with and wholly supported from the small end of said amplifier, and a reproducer rigidly connected with the free end of said conveyor, substantially as described.

7. In a talking machine, a continuous amplifier without flexible joint, a sound conveyor pivotally connected with and wholly supported from the small end of said amplifier for movement in a single plane only, and a reproducer rigidly connected with the free end of said conveyor, substantially as described.

8. In a talking machine, a continuous amplifier without flexible joint, a non-tapering sound conveyor pivotally connected with and wholly supported from the small end of said amplifier, and a reproducer rigidly connected with the free end of said conveyor, substantially as described.

9. In a talking machine, a continuous amplifier without flexible joint, a non-tapering sound conveyor pivotally connected with and wholly supported from the small end of said amplifier for movement in a single plane only, and a reproducer rigidly connected with the free end of said conveyor, substantially as described.

10. In a talking machine, a casing, the interior of which is in free communication with the surrounding atmosphere, a record support, a continuous amplifier without flexible joint supported partly within and partly above said casing, a sound conveyor entirely supported from the small end of the amplifier and for pivotal movement only in a substantially horizontal plane above the record support, and a reproducer rigidly connected to the free end of said conveyor, substantially as described.

11. In a talking machine, a casing, the interior of which is in free communication with the surrounding atmosphere, a record support, a continuous amplifier without flexible joint supported partly within and partly above said casing, a non-tapering sound conveyor entirely supported from the small end of the amplifier and for pivotal movement only in a substantially horizontal plane above the record support, and a reproducer rigidly connected to the free end of said conveyor, substantially as described.

12. In a talking machine, a casing, the interior of which is in free communication with the surrounding atmosphere, a record support, a stationary continuous amplifier without flexible joint supported partly within and partly above said casing, a sound conveyor entirely supported from the small end of the amplifier and for pivotal movement only in a substantially horizontal plane above the record support, and a reproducer rigidly connected to the free end of said conveyor, substantially as described.

13. In a talking machine, a casing, the interior of which is in free communication with the surrounding atmosphere, a record support, a stationary continuous amplifier without flexible joint supported partly within and partly above said casing, a non-tapering sound conveyor entirely supported from the small end of the amplifier and for pivotal movement only in a substantially horizontal plane above the record support, and a reproducer rigidly connected to the free end of said conveyor, substantially as described.

14. In a talking machine, the combination with a casing having openings in the sides and top thereof, a record support above said casing, and operating means for said record support, of a continuous amplifier supported partly within and partly above said casing, a sound conveyor pivotally connected at one end with the small end of the amplifier and provided at its other end with a reproducer, <sup>or in relation to the record support</sup> substantially as described.

15. In a talking machine, a casing having free communication with the surrounding atmosphere and provided with an opening in the front thereof, a framework secured to said casing at the top thereof, a record support mounted on said framework above the casing, operating means for said record support, a continuous amplifier supported partly within and partly above said casing, the mouth of said amplifier being adjacent the opening <sup>the</sup> in front of the casing and a sound conveying tube pivoted at one end to the small end of the amplifier and provided at its other end with a sound box, substantially as described.

16. In a talking machine, the combination with a casing having openings in the sides and top thereof, a record support above said casing, and operating means for said record support, of a continuous amplifier supported partly within and partly above said casing, a non-tapering sound conveyor pivotally connected at one end with the small end of the amplifier and provided at its other end with a reproducer in operative relation to the record support, substantially as described.

17. In a talking machine, the combination with a casing having openings in the sides and top thereof, a record support above said casing, and operating means for said record support, of a continuous amplifier supported partly within and partly above said casing, a sound conveyor pivotally connected at one end with the small end of the amplifier for movement in a substantially horizontal plane only and provided at its other end with a reproducer in operative relation to the record support, substantially as described.



18. In a talking machine, the combination with a casing having openings in the sides and top thereof, a record support above said casing, and operating means for said record support, of a continuous amplifier supported partly within and partly above said casing, a (non-tapering) sound conveyor pivotally connected at one end with the small end of the amplifier for movement in a substantially horizontal plane only and provided at its other end with a reproducer in operative relation to the record support, substantially as described.

19. In a talking machine, the combination with a casing having openings in the sides and top thereof, a record support above said casing, and operating means for said record support, of a continuous amplifier supported partly within and partly above said casing, (the mouth of the amplifier being adjacent to one of the openings in the sides of the cabinet, a sound conveyor pivotally connected at one end with the small end of the amplifier and provided at its other end with a reproducer in operative relation to the record support, substantially as described.

20. In a talking machine, the combination with a casing having openings in the sides and top thereof, a record support above said casing, and operating means for said record support, of a continuous amplifier supported partly within and partly above said casing, a sound conveyor pivotally connected at one end with the small end of the amplifier and provided at its other end with a reproducer rigidly connected therewith and supported in operative relation to the record support, substantially as described.

21. In a talking machine, the combination with a casing having openings in the sides and top thereof, a record support above said casing, and operating means for said record support, of a stationary continuous amplifier supported partly within and partly above said casing, a sound conveyor pivotally connected at one end with the small end of the amplifier and provided at its other end with a reproducer in operative relation to the record support, substantially as described.

22. In a talking machine, a casing having free communication with the surrounding atmosphere and provided with an opening in the front thereof, a framework secured to said casing at the top thereof, a record support mounted on said framework above the casing, operating means for said record support, a continuous amplifier supported partly within and partly above said casing, the mouth of said amplifier being adjacent the opening in the front of the casing, and a sound conveying tube pivoted at one end to the small end of the amplifier and provided at its other end with a sound box rigidly connected therewith, substantially as described.

23. In a talking machine, a casing having free communication with the surrounding atmosphere and provided with an opening in the front thereof, a framework secured to said casing at the top thereof, a record support mounted on said framework above the casing, operating means for said record support, a continuous amplifier supported partly within and partly above said casing, the mouth of said amplifier being adjacent the opening in the front of the casing, and a sound conveying tube pivoted at one end to the

small end of the amplifier for movement in a horizontal plane only and provided at its other end with a sound box, substantially as described.

24. In a talking machine, a casing having free communication with the surrounding atmosphere and provided with an opening in the front thereof, a framework secured to said casing at the top thereof, a record support mounted on said framework above the casing, operating means for said record support, a continuous amplifier supported partly within and partly above said casing, the mouth of said amplifier being adjacent the opening in the front of the casing, and a sound conveying tube pivoted at one end to the small end of the amplifier for movement in a horizontal plane only and provided at its other end with a sound box rigidly connected therewith, substantially as described.

25. In a talking machine, the combination with a casing having openings in the sides and top thereof, a record support above said casing, and operating means for said record support, of a stationary continuous amplifier supported partly within and partly above said casing, a sound conveyor pivotally connected at one end with the small end of the amplifier and provided at its other end with a reproducer rigidly connected therewith and supported in operative relation to the record support, substantially as described.

26. In a talking machine, a casing having free communication with the surrounding atmosphere and provided with an opening in the front thereof, a framework secured to said casing at the top thereof, a record support mounted on said framework above the casing, operating means for said

record support, a stationary continuous amplifier supported partly within and partly above said casing, the mouth of said amplifier being adjacent the opening in the front of the casing, and a sound conveying tube pivoted at one end to the small end of the amplifier and provided at its other end with a sound box, substantially as described.

27. In a talking machine, the combination with a casing, a record support <sup>(above the casing)</sup> above the casing, and operating means for said record support, of a stationary amplifier supported by the casing with the larger portion thereof within said casing and extending from the front to the rear thereof and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion, a sound conveyor <sup>(pivoted)</sup> pivotally connected to the small end of the amplifier, and a reproducer rigidly connected to the free end of said conveyor in operative relation to the record support, substantially as described.

28. In a talking machine, the combination with a casing, a record support <sup>(above the casing)</sup> above the casing, and operating means for said record support, of a stationary amplifier supported by the casing with the larger portion thereof within said casing and extending from the front to the rear thereof and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion, a sound conveyor <sup>(pivoted)</sup> pivotally connected to and wholly supported from the small end of the amplifier, and a reproducer <sup>(rigidly)</sup> rigidly connected to the free end of said conveyor in operative relation to the record support, substantially as described.

29. In a talking machine, the combination with a casing, a record support above the casing, and operating means for said record support, of a stationary amplifier supported by the casing with the larger portion thereof within said casing and extending from the front to the rear thereof and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion, a sound conveyor pivotally connected for horizontal movement only to the small end of the amplifier, and a reproducer rigidly connected to the free end of said conveyor in operative relation to the record support, substantially as described.

30. In a talking machine, the combination with a casing, a record support above the casing, and operating means for said record support, of a stationary amplifier supported by the casing with the larger portion thereof within said casing and extending from the front to the rear thereof and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion, a sound conveyor pivotally connected for horizontal movement only to the small end of the amplifier and wholly supported thereby, and a reproducer rigidly connected to the free end of said conveyor in operative relation to the record support, substantially as described.

31. In a talking machine, the combination with a casing, a record support above the casing, and operating means for said record support, of a stationary amplifier removably supported by the casing with the larger portion thereof within said casing and extending from the front to the rear

thereof and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion, a sound conveyor pivotally connected to the small end of the amplifier, and a reproducer rigidly connected to the free end of said conveyor in operative relation to the record support, substantially as described.

32. In a talking machine, the combination with a casing, a record support <sup>carried thereby</sup> above the casing, and operating means for said record support, of a stationary amplifier supported by the casing with the larger portion thereof within said casing and extending from the front to the rear thereof and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion, said smaller portion being bent on itself, a sound conveyor <sup>disposed</sup> pivotally connected to the small end of the amplifier, and a reproducer rigidly connected to the free end of said conveyor in operative relation to the record support, substantially as described.

33. In a talking machine, the combination with a casing, a record support <sup>carried thereby</sup> above the casing, and operating means for said record support, of a stationary amplifier supported by the casing with the larger portion thereof within said casing and extending from the front to the rear thereof and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion, said smaller portion being bent on itself to form two <sup>slightly</sup> straight sections inclined to the horizontal, a sound conveyor pivotally connected to the small end of the amplifier, and a reproducer <sup>rigidly</sup> connected to the free end of said conveyor in operative

relation to the record support, substantially as described.

✓ 34. In a talking machine, the combination with a casing, a record support, and operating means therefor supported by said casing, and an amplifier also supported by said casing, of a sound conveyor pivoted to and entirely supported from the small end of said amplifier, a reproducer comprising a sound box rigidly secured to the free end of said amplifier and a floating weight carrying a stylus, and means mounted on said sound box <sup>adapted to and directed with the</sup> for controlling the movement of the floating weight towards and from the sound box and thereby the movement of the stylus out of and into operative engagement with a record on said record support, substantially as described.

35. In a talking machine, the combination with a casing, a record support and operating means therefor supported by said casing, and a (stationary continuous) amplifier also supported by said casing, of a sound conveyor pivoted to and entirely supported from the small end of said amplifier, a reproducer comprising a sound box rigidly secured to the free end of said amplifier and a floating weight carrying a stylus, and means mounted on said sound box for controlling the movement of the floating weight towards and from the sound box and thereby the movement of the stylus out of and into operative engagement with a record on said record support, substantially as described.

36. In a talking machine, the combination with a casing, a record support and operating means therefor supported by said casing, and an amplifier also supported by said casing, of a sound conveyor pivoted to and entirely supported from the small end of said amplifier for movement in a single

plane substantially parallel to the record support, a reproducer comprising a sound box rigidly secured to the free end of said amplifier and a floating weight carrying a stylus, and means mounted on said sound box for controlling the movement of the floating weight towards and from the sound box and thereby the movement of the stylus out of and into operative engagement with a record on said record support, substantially as described. *Ampl 34*

37. In a talking machine, the combination with a casing, a record support and operating means therefor supported by said casing, and a stationary continuous amplifier also supported by said casing, of a sound conveyor pivoted to and entirely supported from the small end of said amplifier for movement in a single plane substantially parallel to the record support, a reproducer comprising a sound box rigidly secured to the free end of said amplifier and a floating weight carrying a stylus, and means mounted on said sound box for controlling the movement of the floating weight towards and from the sound box and thereby the movement of the stylus out of and into operative engagement with a record on said record support, substantially as described. *Ampl 35*

38. In a talking machine, the combination with a casing, a record support and operating means therefor supported by said casing, and an amplifier also supported by said casing, of a sound conveyor pivoted to and entirely supported from the small end of said amplifier, a reproducer comprising a sound box rigidly secured to the free end of said amplifier and a floating weight carrying a stylus, and means comprising a cam member mounted on said sound box for controlling the movement of the floating weight towards and *Ampl 36*



from the sound box and thereby the movement of the stylus out of and into operative engagement with a record on said record support, substantially as described.

✓ 39. An attachment for talking machines comprising a continuous amplifier, a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described. *and 1/2*

40. An attachment for talking machines comprising a continuous amplifier, a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight connected with said sound box for movement relative thereto and carrying a stylus adapted to track a record groove of the hill and dale type, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described. *See 2/8*

41. An attachment for talking machines comprising a continuous amplifier without flexible joint, a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and *and 1/2*

a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

42. An attachment for talking machines comprising a continuous amplifier, a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier (for movement in a single plane only), a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

43. An attachment for talking machines comprising a continuous amplifier, a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means (comprising a cam member pivotally mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

44. An attachment for talking machines comprising a continuous amplifier (without flexible joint), a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier (for movement in a single plane

only, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

*Side  
view  
cont.  
(cont.)*

45. An attachment for talking machines comprising a continuous amplifier without flexible joint, a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means comprising a cam member pivotally mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

*Side  
view  
1942  
(cont.)*

46. An attachment for talking machines comprising a continuous amplifier, a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier (for movement in a single plane only, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means comprising a cam member pivotally mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

*Top  
view  
1941  
15*

47. An attachment for talking machines comprising a continuous amplifier without flexible joint, a sound con-

*2031  
15*

veyor pivotally connected with and wholly supported from the small end of the amplifier for movement in a single plane only, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means comprising a cam member pivotally mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

48. An attachment for talking machines comprising a continuous amplifier, the axis of the larger portion of said amplifier being located substantially in a single plane and the axis of the smaller portion of the amplifier being located in substantially a single plane at right angles to the plane of the axis of the larger portion, a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

49. An attachment for talking machines comprising a continuous amplifier (without flexible joint), the axis of the larger portion of said amplifier being substantially in a single plane and the smaller portion of the amplifier being bent on itself with the axis thereof in substantially a single plane which is substantially at right angles to the plane of the axis of the larger portion, a sound conveyor

*any device capable of movement*  
pivottally connected with and wholly supported from the small end of the amplifier, a reproducer (comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

50. An attachment for talking machines comprising an amplifier (bent on itself), a sound conveyor pivottally connected with and wholly supported from the small end of the amplifier for movement in a single plane only with respect to the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

*1546.17-18*  
51. An attachment for talking machines comprising an amplifier bent (on itself) to form two (straight) sections, the axes of which are in the same plane and at an angle to each other, a sound conveyor pivottally connected with and wholly supported from the small end of the amplifier for movement in a single plane only with respect to the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

trolling the movement of the floating weight<sup>del</sup> and stylus towards and away from said sound box, substantially as described.

52. An attachment for talking machines comprising an amplifier (bent on itself), a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier for movement in a single plane only with respect to the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus adapted for tracking a record groove of the hill and dale type, said floating weight being connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

53. An attachment for talking machines comprising an amplifier (bent on itself to form two (straight) sections) (the <sup>axes</sup> of which are in the same plane and at an angle to each other), a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier for movement in a single plane only with respect to the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus adapted for tracking a record groove of the hill and dale type, said floating weight being connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

54. An attachment for talking machines comprising an amplifier (bent on itself and free from flexible joints), a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier for movement in a single plane only with respect to the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

55. An attachment for talking machines comprising an amplifier (bent on itself to form two straight sections, the axes of which are in the same plane and at an angle to each other), a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier for movement in a single plane only with respect to the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus (adapted for tracking a record groove of the hill and dale type, said floating weight being connected with said sound box for movement relative thereto, and means comprising a cam member mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

56. An attachment for talking machines comprising an amplifier (bent on itself and free from flexible joints),

a sound conveyor pivotally connected with and wholly supported from the small end of the amplifier (for movement in a single plane only with respect to the amplifier) a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means comprising a cam member mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

Insert A - Claims 1 to 17 inc. 4/8/14

Insert B - Claims 1 to 6 inc. 5/15/14



This specification signed and witnessed this 28<sup>th</sup> day of February 1913

Thos. A. Edison

Witnesseth:

1. William A. Hardy
2. Mary J. Laidlaw

## Oath.

State of New Jersey } ss.,  
County of Essex }

THOMAS A. EDISON, the above named  
petitioner, being duly sworn, deposes and says that he is a citizen of the United  
States, and a resident of West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the  
improvements in

### TALKING MACHINES

described and claimed in the annexed specification; that he does not know and  
does not believe that the same was ever known or used before his invention or  
discovery thereof; or patented or described in any printed publication in the  
United States of America or any foreign country before his invention or  
discovery thereof, or more than two years prior to this application; or patented  
in any country foreign to the United States on an application filed more than  
twelve months prior to this application; or in public use or on sale in the  
United States for more than two years prior to this application; and that no  
application for patent upon said invention has been filed by him or his legal  
representatives or assigns in any foreign country.

Thos. A. Edison

Sworn to and subscribed before me this 28<sup>th</sup> day of February 1913

Mary J. Laidlaw  
Notary Public.

NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

[Seal]

Sub

752 276

NOV 23 1877

3-1

1877

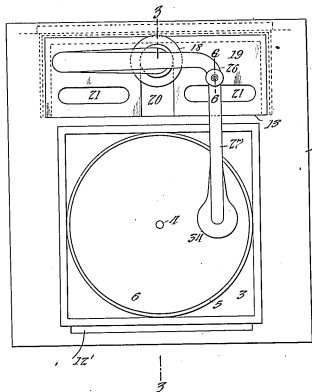


Fig. 1

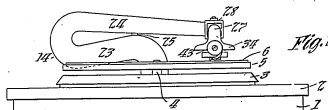


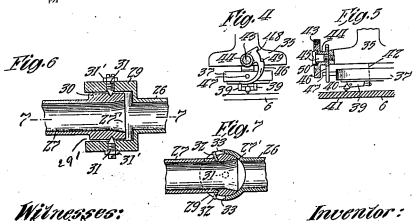
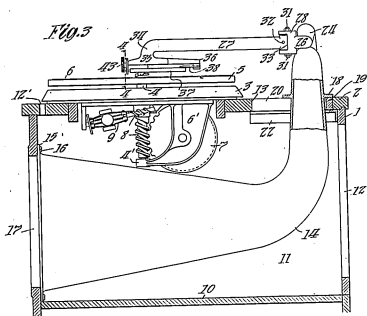
Fig. 2

Witnesses:  
Frank B. Lewis  
John B. Lewis

Inventor:  
Thomas A. Edison  
By *John B. Lewis*  
his Atty.

752276

3



**Witnesses:**  
 Frank Davis  
 William C. Hardy

**Inventor:**  
 Thomas A. Edison  
 By *John H. ...*  
 His Atty

752 276

DIV. 28.)

3

Fig. 9

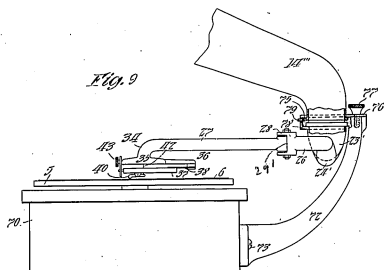
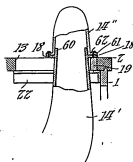


Fig. 8



Witnesses:  
 Thos. Lewis  
 William C. Hardy

Inventor:  
 Thomas A. Edison

By: H. H. H.  
 His Atty.

Div. 23 Room 379

2-300

Paper No. 2, Red.

Address only  
The Commissioner of Patents,  
J.H.W. B&T.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

April 10, 1913.

Dyer & Holden,  
Edison Office Building,  
Orange, New Jersey.

U. S. PATENT OFFICE,  
APR 10 1913  
MAILED.

Please find below a communication from the EXAMINER in charge of the application of  
Thomas A. Edison, serial number 752,276, filed March 6, 1913, for  
Talking Machines.

*E.B. Moore*

Commissioner of Patents.

G-3511

Page 2, applicant should make reference to the patent number rather than the ~~xxxxx~~ application number for his reference to the disclosure of the reproducer.

Page 6, line 1, "21" should be "22".  
29 is not found on the drawing.

Page 11, line 17, "plan" should be "plane".

Claims 1 to 5 inclusive are rejected on Johnson, June 11, 1907, #856,704, (181-3); also on English, Dec. 26, 1911, #1,013,003, (181-3), or Raddie, Eng. patent, Aug. 15, 1910, #19,144, (181-3), no invention being found in omitting the U-tube and its function as is common in the art as see for example, Rabbitt, October 22, 1912, #1,041,871, (181-3); also on Dyer, Dec. 31, 1912, #1,049,215, (181-3), or Simon, Eng. patent, July 5, 1904, #18,060, (181-3), Figure 2, no invention being found in omitting the horizontal pivots and their function as is common in the art as see for example, Rabbitt.

Claims 6 to 13 inclusive are objected to on the negative limitation "without flexible joint".

Claims 6, and 7 are rejected on the above cited references and reasons or Elste, Eng. patent, Sept. 1, 1908, #18,965, (181-3).

#752,275-----2.

No invention is found in making the amplifier in <sup>one</sup> piece in view of the disclosures of Hall, May 31, 1910, #959,522, (181-2), or Dyer, et al., Nov. 28, 1911, #1,010,395, (181-2).

Claims 8 and 9 are rejected on the last cited references and reasons. It is patentably immaterial whether the conveyor is tapering or not as the non tapering conveyor is quite as well known in this art as the tapering conveyor, see Dyer cited, Johnson cited or Johnson, March 21, 1905, #785,362, (181-3).

Claims 10 to 13 inclusive are rejected on Simon for the reasons fully set out above.

Claims 14, 16, 17, 18, 20, 21, 25 are rejected on Miller, June 20, 1905, #793,013, (181-3), Figure 6, provided with a sound conduit above the partition as in Johnson, #856,704. *if need*

These last cited claims and also claims 15, 19, 22, 23, 24, and 26, are rejected as no invention is found in leaving the sides of the cabinet in Johnson cited open, in view of Simon. *C. K. in prior*

Claims 27 and 31 are rejected on Hoschke, Feb. 8, 1910, #948,327, (181-3). Note the pivotal connection f'. Nor is invention found in providing for the horizontal movement of the sound box by well known expedients as in Rabbitt or Elste cited. *11*

Claims 28, 29 and 30 are rejected on Hoschke for the reasons given. No invention is found in leaving off the horizontal pivots and their function, in view of the cited art; also on the second grounds of rejection of claim 27.

Claim 32 is rejected on Hoschke, in view of Keen, Aug. 3, 1909, #929,859, (181-2). Invention is not found in extending Hoschke's end of the amplifier so as to double on itself, in view of Keen's disclosure.

Claims 33, 51, 53 and 55 are objectionable as inaccurately descriptive in the reference to "two straight sections".

Claims 34, 35, 36, 37 and 38 are rejected on Johnson, #856,704, *English, Reddie or Elste*, in view of Macdonald,

#752,276-----5.

Nov. 14, 1911, #1,008,608, (181-5). Also no invention would lie in substituting for the means disclosed by Macdonald any such means as in Macdonald, Feb. 25, 1913, #1,054,359, (181-2); Scott, October 1, 1912, #1,040,032, (181-10); Hart, May 5, 1903, #727,357, (181-10), or French patent, #320,160, (181-10).

Claims 39, 40, 42, 43, 46, 50, 51, 52, 53 and 55 are rejected on the last cited references and reasons and also upon either Combret, French patent, May 15, 1905, #378,523, (181-5), or Combret, French patent, Feb. 19, 1907, #370,758, (181-3), provided with Macdonald's tone arm movable in a single plane.

Claims 41, 44, 45, 47 and 49 are objectionable owing to the negative limitation: "without flexible joint".

Claims 41, 44, 45, 47, 54 and 55 are rejected on the references and reasons of rejection of claim 39.

No invention is found in making the amplifier in those references where it is composed of a number of parts in a single piece, in view of the disclosures of Hall, Dyer, and either Combret.

Claim 48 is rejected on Weschke, for the reasons given in view of Macdonald, for the reasons given.

The claims are many times too numerous in this application for the scope of applicant's invention and are required to be reduced in number by one third.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
TALKING MACHINES, )  
Filed March 6, 1913, ) Room No. 379.  
Serial No. 752,276. )

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
April 10, 1913, please amend the above entitled case as  
follows:

Page 2, lines 12 and 13, cancel "my pending  
application, Serial No. 627,952, filed May 18, 1911" and  
substitute therefor - patent No. 1,055,621, granted to me  
on March 11, 1913 - .

Page 6, line 1, cancel "21" and insert - 22 -

Page 11, line 17, change "plan" to - plane -

Cancel all the claims and insert in place  
thereof the following claims:

1. *Cancelled 5/17/17*  
*Amended 5-15*  
In a talking machine, the combination with a  
casing, a record support carried thereby, and operating  
means for said record support, of *an* ~~a~~ *5-5-15* continuously tapering  
amplifier supported by the casing with the larger portion  
thereof within said casing and extending from adjacent the  
front towards the rear of the latter and with the smaller  
portion thereof above the casing and extending transverse-  
ly of the latter substantially at right angles to said  
larger portion and a sound conveyor ~~connected~~ *5-5-15* and pivotally  
*supported by 5-5-15* connected to the smaller end of the amplifier and having a  
*to which the amplifier has only* reproducer connected to the free end thereof *in line relation thereto and 5/13/17* in operative  
relation to the record support, substantially as described.



*Cancelled 9/15/17*

2. In a <sup>Monograph or 5-5-15</sup> talking machine, the combination with a casing, a record support carried thereby, and operating means for said record support, of a <sup>5-5-15</sup> continuously tapering stationary amplifier supported by the casing with the larger portion thereof within the casing and extending from adjacent the front towards the rear of the latter and with the smaller portion thereof above the casing and extending transversely of the same substantially at right angles to said larger portion, a sound conveyor <sup>5-5-15</sup> directly and <sup>supported by 5-5-15</sup> pivotally connected to the small end of the amplifier for movement only in a direction parallel to the record support, and a reproducer rigidly connected to the free end of said conveyor in operative relation to the record support, substantially as described.

3. In a <sup>Monograph or 5-5-15</sup> talking machine, the combination with a casing, a record support carried thereby, and operating means for said record support, of a continuously tapering amplifier supported by the casing with the larger portion thereof within said casing and extending from adjacent the front towards the rear of the latter and with the smaller portion thereof above the casing and extending transversely of the latter substantially at right angles to said larger portion, said smaller portion being bent on itself, and a sound conveyor <sup>5-5-15</sup> directly and pivotally connected to the smaller end of the amplifier <sup>for movement in a given plane only 5-5-15</sup> and having a reproducer connected to the free end thereof in operative relation to the record support, substantially as described.

4. In a <sup>Monograph or 5-5-15</sup> talking machine, the combination with a casing, a record support carried thereby, and operating means for said record support, of a stationary amplifier supported by the casing with the larger portion thereof within the latter and extending from adjacent the front

~~Cancelled 5/15/17~~  
towards the rear of the same and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion, said smaller portion being bent on itself to form two sections inclined to the horizontal, and a sound conveyor (pivotally connected to the small end of the amplifier and having a reproducer connected to the free end thereof in operative relation to the record support, substantially as described.

5. An attachment for talking machines comprising a continuously <sup>homographically or</sup> ~~repeating~~ <sup>5-5-15</sup> amplifier, the axis of the larger portion of said amplifier being located substantially in a single plane and the axis of the smaller portion of the amplifier being located in substantially a single plane at right angles to the <sup>longitudinal</sup> ~~plane of~~ <sup>5-5-15</sup> the axis of the larger portion, and a sound conveyor directly and pivotally connected to the small end of the amplifier and having a reproducer connected to the free end thereof, substantially as described.

~~Cancelled 5/15/17~~  
6. An attachment for talking machines comprising a continuously <sup>homographically or</sup> ~~repeating~~ <sup>5-5-15</sup> amplifier, the axis of the larger portion of said amplifier being located substantially in a single plane and the axis of the smaller portion of the amplifier being located in substantially a single plane at right angles to the <sup>longitudinal</sup> ~~plane of~~ <sup>5-5-15</sup> the axis of the larger portion, and a sound conveyor directly and pivotally connected to the small end of the amplifier for movement only in a single direction with respect to the amplifier, and having a reproducer connected to the free end thereof, substantially as described.

Cancelled 5/15/17

<sup>Amplifier or 5-5-15</sup>  
7. An attachment for talking machines comprising  
<sup>an 5-5-15</sup>  
~~a continuously tapering amplifier, the axis of the larger~~  
<sup>of the amplifier 5-5-15</sup>  
~~portion of said amplifier being located substantially in a~~  
<sup>Cancelled 5-5-15</sup>  
~~single plane and the axis of the smaller portion of the~~  
~~amplifier being located in substantially a single plane~~  
~~at right angles to the plane of the axis of the larger~~  
<sup>of the amplifier 5-5-15</sup>  
~~portion, a sound conveyor directly and pivotally connected~~  
<sup>by 5-5-15</sup>  
~~with the small end of the amplifier for movement only in a~~  
~~single direction (with respect to the amplifier), a reproducer~~  
~~comprising a sound box rigidly connected to the free end of~~  
~~said conveyor and a floating weight carrying a stylus and~~  
~~connected with said sound box for movement relative thereto,~~  
~~and means mounted on said sound box for controlling the~~  
~~movement of the floating weight and stylus towards and~~  
~~away from said sound box, substantially as described.~~

<sup>Amplifier or 5-5-15</sup>  
8. An attachment for talking machines comprising  
<sup>an 5-5-15</sup>  
~~a continuously tapering amplifier, the axis of the larger~~  
<sup>of the amplifier 5-5-15</sup>  
~~portion of said amplifier being located substantially in a~~  
<sup>Cancelled 5-5-15</sup>  
~~single plane and the axis of the smaller portion of the~~  
~~amplifier being located in substantially a single plane~~  
~~at right angles to the plane of the axis of the larger~~  
<sup>of the amplifier 5-5-15</sup>  
~~portion, a sound conveyor directly and pivotally connected~~  
<sup>by 5-5-15</sup>  
~~with the small end of the amplifier for movement only in a~~  
~~single direction (with respect to the amplifier), a reproducer~~  
~~comprising a sound box rigidly connected to the free end of~~  
~~said conveyor and a floating weight carrying a stylus and~~  
~~connected with said sound box for movement relative thereto,~~  
~~and means mounted on said sound box and adapted to coast~~  
~~directly with the floating weight for controlling the~~  
~~movement of the latter and the stylus towards and away~~  
~~from said sound box, substantially as described.~~

54 Cancelled 5/5/17

8. An attachment for talking machines comprising a continuously tapering amplifier, the axis of the larger portion of said amplifier being substantially in a single plane and the smaller portion of the amplifier being bent to form two sections on a common axis and with the axes on itself with the axis thereof in substantially a single plane which is substantially at right angles to the plane of the axis of the larger portion, and a sound conveyor pivotally connected with the small end of the amplifier and provided with a reproducer at its free end, substantially as described.

10. An attachment for talking machines comprising an amplifier without flexible joint, the axis of the larger portion of said amplifier being substantially in a single plane and the smaller portion of the amplifier being bent on itself with the axis thereof in substantially a single plane which is substantially at right angles to the plane of the axis of the larger portion, and a sound conveyor pivotally connected with the small end of the amplifier and provided with a reproducer at its free end, substantially as described.

9. An attachment for talking machines comprising a continuously tapering amplifier, the axis of the larger portion of said amplifier being substantially in a single plane and the smaller portion of the amplifier being bent to form two sections on a common axis and with the axes on itself with the axis thereof in substantially a single plane which is substantially at right angles to the plane of the axis of the larger portion, a sound conveyor pivotally connected with the small end of the amplifier for movement only in a single direction with respect to the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor and a floating

*Cancelled 9/15/17*

weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

*12. 10.*

*12. An attachment for talking machines comprising*  
*a continuously tapering amplifier, the axis of the larger*  
*portion of said amplifier being substantially in a single*  
*plane and the smaller portion of the amplifier being bent*  
*on itself with the axis thereof in substantially a single*  
*plane which is substantially at right angles to the plane*  
*of the axis of the larger portion, a sound conveyor pivot-*  
*ally connected with the small end of the amplifier for*  
*movement only in a single direction with respect to the*  
*amplifier, a reproducer comprising a sound box rigidly*  
*connected to the free end of said conveyor and a floating*  
*weight carrying a stylus and connected with said sound*  
*box for movement relative thereto, and means mounted on*  
*said sound box and adapted to directly coact with the*  
*floating weight for controlling the movement of the latter*  
*and stylus towards and away from said sound box, substantial-*  
*ly as described.*

*13. An attachment for talking machines, comprising*  
*a continuous amplifier without flexible joint, the axis*  
*of the larger portion of said amplifier being substantially*  
*in a single plane and the smaller portion of the amplifier*  
*being bent on itself with the axis thereof in substantial-*  
*ly a single plane which is substantially at right angles*  
*to the plane of the axis of the larger portion, a sound*  
*conveyor pivotally connected with the small end of the*  
*amplifier for movement only in a single direction with*

respect to the amplifier, a reproducer comprising a sound box rigidly connected to the free end of said conveyor and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.

*Original* ~~14. An attachment for talking machines, comprising a continuously tapering amplifier bent to form two sections, inclined towards each other and having their longitudinal axes in the same plane, a sound conveyor pivotally connected with the small end of the amplifier for movement only in a single direction with respect to the amplifier, and a reproducer connected to the free end of said conveyor, substantially as described.~~ *Amended 5-5-15*  
*Amended 5-5-15*  
*on each slope*

~~15. An attachment for talking machines comprising a continuously tapering amplifier bent to form two sections, inclined towards each other and having their longitudinal axes in the same plane, a sound conveyor pivotally connected with the small end of the amplifier for movement only in a single direction (with respect to the amplifier), a reproducer comprising a sound box rigidly connected to the free end of the said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box for controlling the movement of the floating weight and stylus towards and away from said sound box, substantially as described.~~ *Amended 5-5-15*  
*on each slope*  
*not connected*

~~16. An attachment for talking machines comprising a continuously tapering amplifier bent to form two~~ *Amended 5-5-15*  
*on each slope*

Cancelled 5/18/17

*one overriding the other said sections being 2 1/2 in*  
sections, inclined towards each other and having their  
longitudinal axes in the same plane, a sound conveyor  
*of 5-5-15*  
pivotaly connected with the small end of the amplifier  
for movement only in a single direction with respect to  
the amplifier, a reproducer comprising a sound box rigidly  
connected to the free end of the said conveyor, and a  
floating weight carrying a stylus and connected with said  
sound box for movement relative thereto, and means mounted  
on said sound box and adapted to coast directly with the  
floating weight for controlling the movement of the latter  
and stylus towards and away from said sound box, sub-  
stantially as described.

*75 44 4-6 Monograph of 5-5-15*  
*on small 5-10-11*  
29. An attachment for talking machines, comprising a  
*an 5-5-15*  
continuously tapering amplifier bent to form two sections  
*one overriding the other, said sections being 2 1/2 in*  
inclined towards each other and having their longitudinal  
axes in the same plane, a sound conveyor pivotaly *supported*  
*by 5-5-15* connected to the small end of the amplifier for movement only in a  
single direction with respect to the amplifier, a repro-  
ducer comprising a sound box rigidly connected to the free  
end of the said conveyor, and a floating weight carrying  
a stylus and connected with said sound box for movement  
relative thereto, and means comprising a cam member  
pivotaly mounted on said sound box and adapted to coast  
directly with the floating weight for controlling the  
movement of the latter and stylus towards and away from  
said sound box, substantially as described.

#### REMARKS

The Examiner is requested to kindly apply  
reference character 29' to Figs. 3, 6 and 9 to designate  
the cut-away portion of the cylindrical casing 29 which

comprises a part of the pivotal connection 28.

The cancellation of the original claims is not to be construed as an admission that these claims are met by the references cited thereagainst. The new claims submitted herewith, however, are thought to sufficiently cover the invention and to more clearly refine the same.

Claims 1 to 3 differentiate from the references by specifying, in combination with the casing, record support and operating means of a talking machine, a continuously tapering amplifier supported by the casing with the larger portion thereof within the casing and extending from adjacent the front towards the rear of the latter and with the smaller portion thereof above the casing and extending transversely thereof substantially at right angles to said larger portion. Claim 2 also specifies that the sound conveyor is directly and pivotally connected to the small end of the amplifier for movement only in a direction parallel to the record support, while claim 3 specifies that the smaller portion of the amplifier is bent on itself.

Claim 4 is substantially the same as original claim 23 which the Examiner apparently considered to be allowable.

Referring to claims 5 to 12, none of the references disclose an attachment for talking machines comprising an amplifier or a continuously tapering amplifier, the axis of the larger portion of which is located substantially in a single plane and the axis of the smaller portion of which is located in substantially a single plane at right angles to the plane of the axis of the larger portion. Claims 9 to 12 also specify that the smaller portion of the amplifier is bent on itself while claims 10 and 12 specify an amplifier without flexible joint.



Claim 13 is substantially the same as original claim 49 which was apparently considered to be allowable.

It is submitted that the objection to the expression "without flexible joint" as used to describe the amplifier in several of the claims is not well founded. This expression has a definite and positive meaning in the connection used and it is not apparent what language could be employed to more appropriately bring out the fact that the amplifier is free from flexible joints. If the Examiner <sup>can</sup> suggest any positive expression for this purpose as suitable as the one used, applicant will be pleased to adopt the same.

With reference to claims 14 to 17, none of the references discloses an attachment for talking machines comprising a continuously tapering amplifier bent to form two sections inclined towards each other and having their longitudinal axes in the same plane, and a sound conveyor pivotally connected with the small end of the amplifier for movement only in a single direction with respect to the amplifier.

For the above reasons, the claims presented herewith are believed to clearly and patentably distinguish from the references of record and accordingly careful consideration and allowance of these claims are requested.

Respectfully submitted,

THOMAS A. EDISON,

By Dyer & Holden  
his Attorneys.

Orange, New Jersey,

April 8, 1914.

WAH-KOK

Div. 25 Room 379

S-290

Paper No. 4Address only  
"The Commissioner of Patents,  
Washington, D. C."All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

LOE-Su

WASHINGTON

May 16, 1914.

Dyer and Holden,

Edison Office Building,

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Talking Machines, filed March 6, 1912.

Serial No. 752,276.

Commissioner of Patents.

c 4-3013

In response to amendment of April 9, 1914.

Claims 1 and 5 are rejected on Heschke, of record, no invention being found in tapering B in view of the usual employment of tapering conduits in this art; also on

Wieder, 1,013,247, Jan. 2, 1912, (181-3).

no invention being found in disposing the horn in the casing below the record support, rather than above, in view of the very common arrangement of the horn in such position; also for similar reasons on

Keen, 929,859, Aug. 3, 1909, (181-2)

Opel, English patent, 73228, Apr. 4, 1907, (181-3), 1 sheet, or

9076, " 25, 1908, " " " "

also no invention being found in rearranging the sound conduit of Dyer, of record, or of

Rabbitt,

1,041,871, Oct. 22, 1912, (181-3).

Catusci,

1,077,972, Nov. 11, 1912, (181-6).

Werts,

1,065,821, June 3, 1913, (181-3), or

Pleasant et al., English patent, 11,567, May 16, 1912, (181-3), 1 sheet.

no invention being seen in the arbitrary arrangement of the mouth of the horn below and the transverse portion above the partition carrying the record support, as it is believed that the function and operation of the conduit will be in no way varied; also as not patentably distinguishing from

Riviere, English patent, 17,763, July 30, 1909, (181-3), 1 sheet.

In such of the references as do not employ a tapered conduit throughout invention is not found in so tapering the conduit throughout, in view of its very common use in this art.

Claims 2 and 6 are rejected on Wieder, Opel, Dyer, Rabbitt, Mertz, or Fleasance, for the reasons given, no invention being found in using one old type of tone arm in place of another. See

Johnson, 814,786, Mar. 13, 1906, (181-3), or  
Macdonald, 1,008,606, Nov. 14, 1911, (181-6).

Claims 3, 9 and 10 are rejected on Kean, Opel, Rivoire, or Dyer, for the reasons given.

Claim 4 is allowed.

Claims 5 to 13 inclusive are objectionable as inaccurately descriptive in lines 2 to 4, "the axis ---- single plane", there being an infinity of planes in which said axis lies.

Claims 7, 8, 11, 12, 13, 15, 16 and 17 are rejected as aggregations of the details of the sound conduit system and the details of the sound box, there being no patentable combination between the details of the two groups of mechanism. In re McNeil, 100 O. C., 2178.

Claims 7 and 8 are also rejected on the references and reasons of rejection of claim 2, in view of the floating weight raising means of Scott, Hart, or French patent, of record, or

Mastrand, 880,820, Feb. 25, 1908, (181-10), or  
Macdonald, 885,544, Nov. 13, 1906, " " "

Claims 10 and 13 are objectionable as including a negative limitation, to wit: "without flexible joint". Moreover, such limitation is held patentably immaterial, as the omission of the joint, together with its function, is held to be no invention.

Claims 11, 12 and 13 are also rejected on the grounds of rejection of claim 3, in view of the floating weight elevating means cited.

Claim 14 is rejected as not distinguishing patentably from such structures as in Dyer, Fleasance, or Elste, of record, for the reasons above given in connection with the type of tone arm employed in references of record. In a certain sense the axis of the transverse

section of the conduit of these references involves two portions relatively inclined.

Claims 15, 16 and 17 are rejected on the grounds of rejection of claim 14, in connection with the floating weight elevating means cited.

It is to be noted that the combination of such floating weight elevating means and a conduit involving a tone arm movable in one plane only is disclosed in MacDonald, 1,008,605.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON

TALKING MACHINES

Serial No. 752,276

Filed March 6, 1913.

Room No. 379.

HON. COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of May 16, 1914, please amend the above entitled case as follows:

Change the title of the application to "Phonographs or Talking Machines".

Page 1, lines 8 and 9, before "talking" insert  
- phonographs or -; line 20, before "talking" insert  
- phonograph or -; line 25, after "to" insert - phonographs  
or -.

Page 3, line 1, before "talking" insert  
- phonographs or -; line 27, before "talking" insert  
- phonograph or -.

Page 4, lines 14, 17 and 20 before "talking"  
insert - phonograph or -.

Page 5, line 3, before "talking" insert  
- phonograph or -.

Page 9, line 22, before "talking" insert  
- phonographs or -.

Page 10, line 32, before "talking" insert  
- phonographs or -.

Page 12, line 2, before "talking" insert  
- phonographs or -.

Claims 1 to 4, line 1, before "talking" insert  
- phonograph or -.

Claim 1, line 3, cancel "a continuously tapering"  
and insert - an -; line 9, cancel "directly and"; line 10,  
cancel "connected to" and insert - supported by -; same line,  
after "amplifier" insert - to swing in a given plane only -.

Claim 2, line 3, cancel "continuously tapering";  
line 9, cancel "directly and"; line 10, cancel "connected  
to" and insert - supported by -.

Claim 3, line 10, cancel "directly and pivotally  
connected to" and insert - pivotally supported by -; line  
11, after "amplifier" insert - for movement in a given plane  
only -.

Claims 5 to 9, 11, 12, and 14 to 17, line 1,  
after "for" insert - phonographs or -.

Claims 5 and 6, lines 1 and 2, cancel "a contin-  
uously tapering" and insert - an -.

Claims 5, 6, 7, and 8, lines 2, 3 and 4, cancel  
"the axis of the larger portion of said amplifier being  
located substantially in a single plane and".

Claims 5 and 6, line 6, cancel "plane of the"  
and insert - longitudinal -; line 7, after "portion"  
insert - of the amplifier -; line 8, cancel "connected to"  
and insert - supported by -.

Claim 5, line 8, after "amplifier" insert - to  
move in a given direction only with respect to the  
amplifier -.

Claims 7 and 8, line 2, cancel "a continuously  
tapering" and insert - an -; line 6, cancel "the plane of";  
line 7, after "portion" insert - of the amplifier -; lines  
7 and 8, cancel "connected with" and insert - supported by -.

Claims 9, 11 and 12, line 2, cancel "a continuously tapering" and insert - an -; lines 2, 3 and 4, cancel - the axis of the larger portion of said amplifier being substantially in a single plane and"; lines 6 and 7, cancel "to the plane of" and insert - to -; line 7, after "portion" insert - thereof -; line 8, cancel "connected with" and insert - supported by -.

Claim 9, line 9, after "amplifier" insert - for movement in only one direction with respect to the amplifier

Claims 14, 15 and 16, line 2, cancel "a continuously tapering" and insert - an -; line 5, cancel "connected with" and insert - supported by -.

Claim 17, lines 1 and 2, cancel "a continuously tapering" and insert - an -; lines 4 and 5, cancel "connected with" and insert - supported by -.

Cancel claims 10 and 13.

Renumber claims 11, 12, 14, 15, 16 and 17 as 10 to 15 respectively.

#### REMARKS.

The claims as now presented are believed to clearly and patentably distinguish from all the references of record. These references considered either singly or combined fail to disclose the combination described in any of the claims. All of the claims specify as a distinguishing feature that the conveyor carrying the reproducer or sound box is <sup>pivottally</sup> supported by the small end of the amplifier to move in a given direction only with respect to the amplifier.

For the above reasons further consideration and allowance of the claims are respectfully requested.

THOMAS A. EDISON

By *Dyer and Holden*  
*his attorney*

*James H. McGraw*  
*May 5, 1915*

Div. 25 Room 379

2-200

Paper No. 6

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

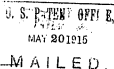
May 20, 1915.

E-Su

Dyer and Holden,

Edison Office Building,

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Talking Machines, filed March 6, 1912,

Serial No. 752,276.

Thomas Ewing  
Commissioner of Patents.

6-3031

In response to amendment of May 6, 1915.

There is nothing novel in supporting a reproducing arm solely from the horn to move in a single plane, as, see for example, Elste, of record, or

French patent, 446,337, July 8, 1912, (181-3), 1 sheet,  
No invention is shown in using such a mounting to permit the reproducer to traverse the record in Mosehke, of record, or in providing such a mounting in connection with a horn below the record support, as is common in the art, in the structures of record, particularly Wiedor, Hertz, Pleasance or Dyer. Claim 1 is rejected.

Claim 2 is rejected on the above references and reasons.

The omission of provision for vertical movement of the sound box, together with the function of such provision, is held not a patentable limitation.

Claims 3 and 4 are allowed.

Claims 5 and 6 are rejected on the grounds of rejection of claim 1.

Claim 6 is also rejected as a substantial duplicate of claim

5.

Claims 7, 8, 10, 11, 12, 13, 14 and 15 are rejected as aggregations, for the reasons of record.

Claims 7 and 8 are rejected on the grounds of rejection of



claim 2, no invention residing in substituting one old reproducer, as in references of record, for another.

Claim 9 is rejected as specifying no more than Elste's construction with his horn turned <sup>fixed in place</sup> arbitrarily at right angles to the paper.

Claims 10, 11, 13, 14 and 15 are rejected on Elste, for reasons given, in view of the sound boxes of record.

Claim 12 is rejected on Elste; also on the other references cited against this claim, in view of such a tone arm mounting as in Elste.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHS OR TALKING  
MACHINES

Filed March 6, 1913

Room No. 379.

Serial No. 752,276

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of  
May 20, 1915, please amend the above entitled case as fol-  
lows:-

Claim 1, line 11, after "thereof" insert - in  
fixed relation thereto and - .

Claim 5, line 9, after "thereof" insert - in  
fixed relation thereto - .

Cancel claim 6.

Claim 9, line 5, cancel "with the axis" and insert  
- to form two sections one overlying the other and with the  
axes - . Line 7, cancel "thereof" and substitute - of the  
amplifier - .

Claim 10, line 5, cancel "with the axis" and insert  
- to form two sections one overlying the other and with the  
axes - . Line 7, cancel "thereof" and insert - of the  
amplifier - .

Claim 11, line 5, cancel "with the axis" and in-  
sert - to form two sections one overlying the other and  
with the axes - . Line 7, cancel "thereof" and insert -  
of the amplifier - .

Claim 12, line 2, after "bent" insert - on itself  
Line 3, after "sections" insert - one overlying the other,  
said sections being - .

Claim 13, line 2, after "bent" insert - on itself  
Line 3, after "sections" insert - one overlying the other,  
said sections being - .

Claim 14, line 2, after "bent" insert - on itself  
Line 3, after "sections" insert - one overlying the other,  
said sections being - .

Claim 15, line 2, after "bent" insert - on itself  
Line 3, before "inclined" insert - one overlying the other,  
said sections being - .

Renumber claims 7 to 15 inclusive as 6 to 14  
inclusive respectively.

#### R E M A R K S

Claims 1, 2 and 5 as now presented clearly distinguish from Elste and French patent No. 440,337 by specifying a sound conveyor pivotally supported by the smaller end of the amplifier for movement only in a given direction, and a reproducer rigidly connected to the free end of said conveyor or a reproducer connected to the free end of the conveyor in fixed relation thereto and in operative relation to the record support. If the device shown in any of the patents to Elste, Gramophone Company Limited, Hoeschke, Wieder, Merts, Fleasance or Dyer were modified so that the sound box or reproducer thereof could not move vertically, such device would be incapable of operating properly, as no means would be present for compensating for vertical irregularities in the record.

It is submitted that claims 6, 7, 9, 10, 12, 13 and 14 are not aggregations, but cover true combinations, as it is necessary to employ with the sound conduit system described in these claims a sound box of the construction set forth, in order to obtain an operative device. It is not apparent that in re McNeil is applicable, as McNeil in his application disclosed a sewing machine having a trimmer combined with a specific form of stitch forming mechanism, which trimmer could be readily operatively combined with other old forms of stitch forming mechanisms, whereas in the present case, it is impossible to combine the sound conduit system described with other forms of sound boxes without rendering the resulting construction practically inoperative.

Claims 6 and 7, former claims 7 and 8, are believed to distinguish from the references for reasons similar to those indicated above in connection with claims 1, 2 and 5.

Claims 8, 9 and 10, former claims 9, 10 and 11, as now presented clearly distinguish from Elate by specifying that the smaller portion of the amplifier is bent on itself to form two sections one overlying the other, with the axes thereof in substantially a single plane which is substantially at right angles to the axis of the larger portion of the amplifier.

Claims 11, 12, 13 and 14, former claims 12, 13, 14 and 15, distinguish from Elate in a manner similar to that indicated in connection with claims 8, 9 and 10.

In the rejection of many of the claims in this application, especially claims 1, 2, 5, 6, 7 and 11, the Examiner found it necessary to combine features disclosed in several different references in order to meet the terms of these claims. It is submitted that to take the several features of those references and combine them in such a manner as to produce the operative combination described in the claims mentioned, would involve invention. In this connection the Examiner's attention is directed to the decision rendered in Ex Parte McCollum, 204 O. G. 1346.

In view of the above, further consideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Dyer and Holden  
His Attorneys

Orange, N. J.

May 13, 1916

WH-JS

Div. 23 Room 379

2-260

Paper No. 8

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

Allow only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not my official by name.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

P 2

WASHINGTON May 20, 1916.

Dyer and Holden,

Railson Office Building,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas E. Railson, for Talking Machines, filed March 6, 1913,

Serial No. 752,275.

Thomas Ewing  
Commissioner of Patents

4-2621

In response to amendment of May 15, 1916.

Claims 1, 2 and 5 are again rejected on the references and reasons of record. They are also rejected on French patent 440,337, in view of Macdonald, 1,008,605, both of record. There would be no invention required to support the tone arm of the Macdonald device directly from the amplifier if it can not already be considered as so mounted. Whether the horn has one kink or another in it seems immaterial to the association of elements specified. To have the sound conduit bend back on itself like a gooseneck is a mere expedient, or matter of selection, but is old, anyway, as shown by way of example in Keen 925,859, of record (see part G).

Upon reconsideration, claims 3 and 4 are rejected on French patent 440,337, in view of Macdonald, for the reasons just given. If applicant considers that there is any invention in the particular bend in the amplifier, it should be claimed per se.

Previous action on claims 6, 7, 9, 10, and 12 to 14 is repeated.

Claims 5 to 12 are also rejected for the reasons given for claims 1 to 5 above.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHS OR TALKING  
MACHINES

Room No. 379.

Filed March 6, 1913

Serial No. 752,276

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of  
May 20, 1916, please amend the above entitled case as fol-  
lows:-

Cancel all the claims and substitute therefor the  
following: -

B

1. In a phonograph or talking machine, a con-  
tinuously tapering amplifier having the smaller portion  
thereof extending transversely of and substantially at  
right angles to the larger portion thereof, said smaller  
portion being bent on itself and being adapted to pivotally  
support a sound conveyor at its smaller end for movement in  
a given plane only, substantially as described.

B

2. In a phonograph or talking machine, an am-  
plifier having the smaller portion thereof extending trans-  
versely of and substantially at right angles to the larger  
portion thereof, said smaller portion being bent on itself  
to form two sections inclined to the horizontal and towards  
each other, and being adapted to pivotally support a sound  
conveyor at its smaller end, substantially as described.

3. In a phonograph or talking machine, a sound conveyor pivotally supported at one end for movement only in a single direction, a reproducer comprising a sound box rigidly connected to the free end of said conveyor and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means mounted on said sound box and adapted to coast directly with the floating weight for controlling the movement of the latter and the stylus towards and away from said sound box, substantially as described.

4. An attachment for phonographs or talking machines, comprising a continuously tapering amplifier, the smaller portion of the amplifier being bent on itself to form two sections, one overlying the other, and with the axes thereof in substantially a single plane which is substantially at right angles to the axis of the larger portion of the amplifier, and a sound conveyor pivotally supported by the small end of the amplifier for movement in only one direction with respect to the amplifier, said conveyor being provided with a reproducer at its free end, substantially as described.

5. An attachment for phonographs or talking machines, comprising a continuously tapering amplifier bent on itself to form two sections, one overlying the other, said sections being inclined towards each other and having their longitudinal axes in the same plane, a sound conveyor pivotally supported on the small end of the amplifier for movement only in a single direction with respect



to the amplifier, and a reproducer connected to the free end of said conveyor, substantially as described.

B 6. An attachment for phonographs or talking machines, comprising a sound conveyor pivotally supported at one end for movement only in a single direction, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means comprising a cam pivotally mounted on said sound box and adapted to directly coast with the floating weight for controlling the movement of the latter and the stylus towards and away from said sound box, substantially as described. -

#### REMARKS

Each of the claims now presented is believed to clearly and patentably distinguish from the references of record.

None of the references discloses a continuously tapering amplifier having the smaller portion thereof bent on itself and extending transversely of and substantially at right angles to the larger portion thereof, as specified in claim 1. This construction is advantageous in that it economizes space without sacrificing any of the volume of the sound produced, and also in that it allows the small end of the amplifier to be properly located for supporting the swinging sound conveyor carrying the reproducer. See lines 18 to 25, page 6 of the specification.

Claim 2 distinguishes from the references in a manner similar to that indicated in connection with claim 1, and also by specifying that the smaller portion of the amplifier is bent on itself to form two sections inclined to the horizontal.

Claim 3 distinguishes from the references by specifying a sound conveyor pivotally supported at one end for movement only in a single direction, a reproducer comprising a sound box rigidly connected to the free end of the conveyor, and a floating weight carrying a stylus and connected with the sound box for movement relative thereto, and means mounted on the sound box and adapted to directly coact with the floating weight for controlling the movement of the latter and the stylus towards and away from the sound box. None of the references discloses means mounted on a sound box and adapted to directly coact with a floating weight for controlling the movement of the latter and the stylus towards and away from the sound box in a construction wherein the sound box of the reproducer is rigidly connected to the free end of a sound conveyor pivotally supported for movement only in a single direction.

Claim 4 distinguishes from the references by specifying a continuously tapering amplifier, the smaller portion of which is bent on itself to form two sections, one overlying the other and with the axes thereof in substantially a single plane which is substantially at right angles to the axis of the larger portion of the amplifier. The advantages of this construction are pointed out in the remarks made above in connection with claim 1.

Claim 5 distinguishes from the reference in a manner similar to that indicated in connection with claim 4, and also by specifying that the two overlying sections of the amplifier are inclined towards each other.

Claim 6 distinguishes from the references in a manner similar to that indicated in connection with claim 3, and also by specifying that the means for controlling the movement of the floating weight and stylus towards and away from the sound box comprises a cam.

In view of the above, further consideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By

*Dyer and Holden*

His Attorneys

Orange, N.J.

May 15, 1917

VE-JS

Div. 22. Reel 379

2-260

Paper No. 916

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
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All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
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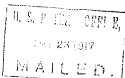
F E

WASHINGTON

May 23, 1917.

Dyer and Holden,Edison Office Building,Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of:

Thomas A. Edison, for Talking Machines, filed March 6, 1913,Serial No. 752,275.

*Thomas Ewing*  
Commissioner of Patents.

2-2011

In response to amendment of May 16, 1917.

Claims 3 to 6 are rejected as having no patentable combination between the details of the sound box and the details of the sound conduit system. The combination of reproducers and sound conduits is old in every talking machine. Improving either element of the combination does not change their relative coaction or make a new or patentable combination. See *In re McNeil*, 100 O. G., 2178. These elements have long been recognized as separate and independent subjects of invention and patenting.

The claims are all rejected on the references and reasons of record. Bending the conduit in one way or another is mere expediency, and not invention, and, besides, the references show various <sup>one</sup> kinks in the conduits, as for example, see Fig. 2 of *Opel*, 7928, of record.

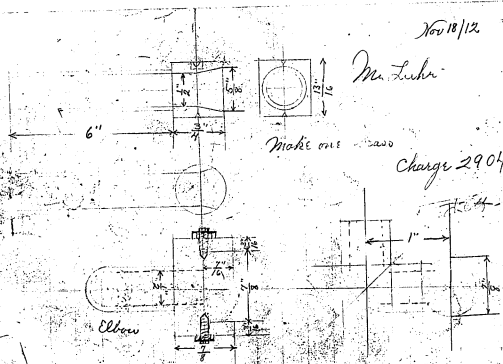
Inasmuch as a clear issue appears to have been reached and since no new references or reasons have been cited, this action is made final.

Nov 18/12

Mr. Luhn

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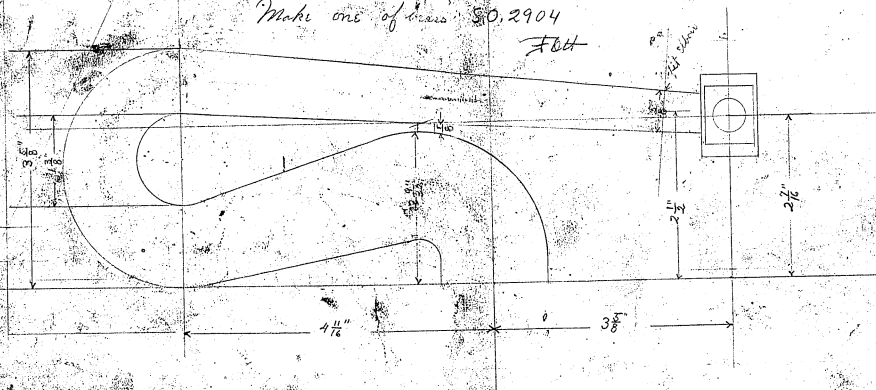
Mr. Luder

11/22/12

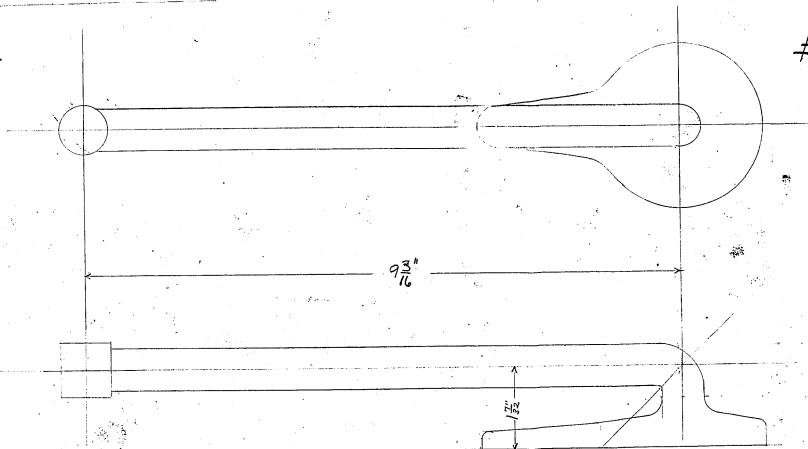
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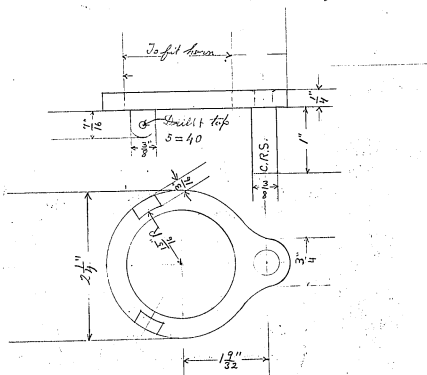
11/25/12

Mr. Luke

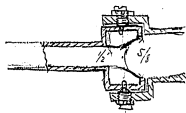
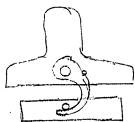
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S.O. 2904

*Handwritten signature*







*See Mr Edison's  
memo. on file wrapper  
Wille*  
April 9, 1918

Mr. Edison:-

FOLIO 916

Attached hereto is your application Serial No. 752,276,  
filed March 6, 1913, entitled Phonographs or Talking Machines .

This application relates to a Victor type of machine reorganized  
so as to be adapted to play Edison records. All the claims now  
in the application are under final rejection, these claims read-  
ing as follows:-

1. In a phonograph or talking machine, a continuous-  
ly tapering amplifier having the smaller portion thereof ex-  
tending transversely of and substantially at right angles to  
the larger portion thereof, said smaller portion being bent  
on itself and being adapted to pivotally support a sound con-  
veyor at its smaller end for movement in a given plane only,  
substantially as described.

2. In a phonograph or talking machine, an ampli-  
fier having the smaller portion thereof extending trans-  
versely of and substantially at right angles to the larger  
portion thereof, said smaller portion being bent on itself  
to form two sections inclined to the horizontal and towards  
each other, and being adapted to pivotally support a sound  
conveyor at its smaller end, substantially as described.

3. In a phonograph or talking machine, a sound  
conveyor pivotally supported at one end for movement only  
in a single direction, a reproducer comprising a sound box  
rigidly connected to the free end of said conveyor and a  
floating weight carrying a stylus and connected with said  
sound box for movement relative thereto, and means mounted  
on said sound box and adapted to coast directly with the  
floating weight for controlling the movement of the latter  
and the stylus towards and away from said sound box, sub-  
stantially as described.

4. An attachment for phonographs or talking  
machines, comprising a continuously tapering amplifier,  
the smaller portion of the amplifier being bent on itself  
to form two sections, one overlying the other, and with the  
axes thereof in substantially a single plane which is sub-  
stantially at right angles to the axis of the larger portion

of the amplifier, and a sound conveyor pivotally supported by the small end of the amplifier for movement in only one direction with respect to the amplifier, said conveyor being provided with a reproducer at its free end, substantially as described.

5. An attachment for phonographs or talking machines, comprising a continuously tapering amplifier bent on itself to form two sections, one overlying the other, said sections being inclined towards each other and having their longitudinal axes in the same plane, a sound conveyor pivotally supported on the small end of the amplifier for movement only in a single direction with respect to the amplifier, and a reproducer connected to the free end of said conveyor, substantially as described.

6. An attachment for phonographs or talking machines, comprising a sound conveyor pivotally supported at one end for movement only in a single direction, a reproducer comprising a sound box rigidly connected to the free end of said conveyor, and a floating weight carrying a stylus and connected with said sound box for movement relative thereto, and means comprising a cam pivotally mounted on said sound box and adapted to directly coact with the floating weight for controlling the movement of the latter and the stylus towards and away from said sound box, substantially as described.

Numerous references have been cited by the Examiner in this application, and I am of the opinion that the application discloses ~~little, if anything~~<sup>nothing</sup>, which patentably distinguishes from the disclosures in these references. Moreover, I do not understand that the subject matter of this application is now of interest to us. Accordingly, I recommend that no appeal be taken in this application and that the same be dropped. Please advise.

*Wm. A. Hardy.*

**Patent Series**

**Patent Application Files**

Folio # 917      Combined Sound Reproducing and Motion Picture  
Projecting Apparatus

Serial #:            757502

Primary Applicant: Higham, Daniel

Date Executed:    3/27/1913

[PHOTOCOPY]

Folio No. 917

Serial No. 757,502

Applicant.

Address.

Daniel Higham

68. Eaton Place  
East Orange, N.J.

Title Combined Sound Reproducing and  
Projection Picture Projecting Apparatus

Filed March 24, 1913

Examiner's Room No. \_\_\_\_\_

Assignee \_\_\_\_\_

Ass't Exec. \_\_\_\_\_

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Page \_\_\_\_\_

Patent No. 1,111,111 Issued \_\_\_\_\_

ACTIONS.

1. Rejected May 21, 1913 16
2. Amended May 14, 1914 17
3. Rejected June 25, 1914 18
4. Amended June 16, 1915 19
5. Rejected July 8, 1915 20
6. \_\_\_\_\_ 21
7. \_\_\_\_\_ 22
8. \_\_\_\_\_ 23
9. \_\_\_\_\_ 24
10. \_\_\_\_\_ 25
11. \_\_\_\_\_ 26
12. \_\_\_\_\_ 27
13. \_\_\_\_\_ 28
14. \_\_\_\_\_ 29
15. \_\_\_\_\_ 30

VAULT

DYER & HOLDEN,  
ORANGE, NEW JERSEY.

# Petition.

To the Commissioner of Patents:

Your Petitioner DANIEL HIGHAM,  
a citizen of the United States, residing and having a Post Office address at  
#68 Eaton Place, East Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

COMBINED SOUND REPRODUCING AND MOTION PICTURE PROJECTING  
APPARATUS

set forth in the annexed specification; and he hereby appoints Byer & Holden,  
(Registration No. 3244), a firm composed of Frank L. Byer and Delos  
Holden, whose address is Edison Office Building, Orange, New Jersey, his  
attorneys with full power of substitution and revocation, to prosecute this  
application, to make alterations and amendments therein, to receive the patent,  
and to transact all business in the Patent Office connected therewith.

*Daniel Higham*

## SPECIFICATION

TO ALL WHOM IT MAY CONCERN:-

BE IT KNOWN, that I, DANIEL HIGHAM, a citizen of the United States and a resident of East Orange, Essex County, New Jersey, have invented certain new and useful improvements in COMBINED SOUND REPRODUCING AND MOTION PICTURE PROJECTING APPARATUS, of which the following is a description:-

My invention relates to combined apparatus by which moving pictures may be thrown on a screen and the sounds appropriate thereto can be given forth simultaneously with the production of the pictures, and more particularly to the provision of improved indicating or signaling means for use in conjunction with such combined apparatus.

In combined apparatus of this character heretofore employed much difficulty has been experienced by the operator of one of the machines in ascertaining when the operator of the other is prepared to start. Also, when the records of the sound reproducing and moving picture machines are being reproduced, it frequently happens that, without one or both of the operators being aware of the fact, the machines fail to exactly coincide or depart from synchronism. This is especially true in the case of the operator of the moving picture machine, as he is necessarily close to the machine, the operation of which is accompanied with considerable noise, and also because the projecting machine and its operator are generally within a substantially sound-proof booth or cabinet, with the result that the operator is unable to hear the sounds emitted by the sound reproducing machine or apparatus.

The principal object of the present invention is to provide in combined apparatus of this type improved means for obviating the above objections, and in accordance with this object I preferably provide means whereby suitable indications, preferably of an audible character, may be transmitted to a position or positions adjacent one or both of the combined machines from a relatively distant position or positions. In its preferred form, my invention comprises motion picture projecting apparatus, suitable sound reproducing apparatus, preferably a phonograph, means, preferably such as disclosed in my patent No. 1,054,203, dated February 25, 1913, for maintaining both apparatus in synchronism, and intercommunicating signaling or indicating means, such as a speaking tube, telephone or the like, between a position adjacent the sound reproducing apparatus and a position adjacent the motion picture projecting apparatus, whereby the operator of either apparatus may communicate with the operator of the other, and also be apprised of the conditions of operation of the latter. The sound reproducing apparatus is preferably located adjacent the screen on which the pictures are projected by the motion picture projecting apparatus.

Other objects and features of my invention will appear more fully in the following description and appended claims.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawings, forming a part of this specification, and in which-

Figure 1 is a diagrammatic view showing combined sound reproducing and motion picture projecting apparatus provided with one form of signaling or indicating means in



accordance with my invention; and

Figures 2, 3 and 4 are views similar to Figure 1 showing modified forms of signaling or indicating devices which may be employed.

In all of the figures, corresponding parts are designated by the same reference characters.

The moving picture apparatus shown generally at 1 may be operated by any suitable motive means, although it is preferably manually operated by a hand crank (not shown) in the usual manner, and is arranged to project pictures on a screen 2 located at a distance therefrom. Preferably, closely adjacent the screen 2 and in the rear thereof, I provide a phonograph 3 having the usual amplifier or horn

4. It is to be understood, of course, that my invention is not limited to the use of a phonograph, but that any suitable sound reproducing apparatus adapted to reproduce the sounds appropriate to the pictures thrown on the screen by the projecting machine 1 may be employed. In order to maintain the phonographic and projecting apparatus in unison or synchronism, I provide a synchronizer designated generally by reference character 5 and preferably of the form disclosed in my patent No. 1,054,203 above referred to. The synchronizer 5 is directly connected to the projecting apparatus and is connected to the phonograph by a belt or cord 6 passing over idler pulleys 7, and comprises an adjusting or compensating device 8 whereby, if the phonographic and projecting apparatus do not coincide or depart from synchronism, synchronism may be quickly and readily established or restored. For a more detailed description of the synchronizing means, reference is made to the above mentioned patent. It is to be understood that my invention contemplates the utilization

of any other suitable means for maintaining the sound reproducing and picture projecting apparatus in synchronism and for restoring synchronism when there is a departure therefrom. As is customary, the projecting machine or apparatus 1 is preferably located in a substantially sound-proof cabinet or booth 9 which is provided with a suitable aperture 10 through which the pictures may be projected on screen 2, and a preferably glazed opening 11, whereby the operator within the cabinet may observe the pictures projected on the screen.

In giving exhibitions by the combined apparatus above described, in theatres, halls and similar places, it is impractical for the operator of either machine to shout to the other operator across the intervening space in order to notify the latter when to start or for other reasons. Also, during the operation of the combined apparatus, due to the noise resulting from the operation of the motion picture projecting machine as well as the fact that he is within the cabinet 9, it is impossible for the operator of the projecting machine to hear the sounds given forth by the phonograph and thereby ascertain whether the two machines are operating in unison or when there is a departure from synchronism. Accordingly, I provide means for obviating this objection and in the four figures of the drawing have shown a corresponding number of forms of signaling or indicating devices for this purpose.

In Figure 1 the indicating device is shown as a telephone which preferably consists of a receiver 12 located at a position adjacent the motion picture machine, a transmitter 13 located adjacent the phonograph and preferably

secured within the mouth of the horn or amplifier 4, and the conductors 14 connecting the receiver and transmitter. Current is supplied to the conductors from a suitable source such as a battery 15. The receiver 12 is preferably in the form of a head band provided with hearing tubes, which may be readily applied and adjusted to the head and ears, whereby the operator of the motion picture machine may hear the sounds from the phonograph during the exhibition and thus be enabled to maintain the combined apparatus in synchronism. A speaking tube 16 is also preferably provided, extending into the mouth of the horn and preferably through the wall thereof, and communicates at one end with the transmitter 13, whereby the operator of the phonograph may communicate directly with the moving picture machine operator for the purpose of notifying the latter when to start, or for any other purpose.

In the modification shown in Figure 2, a speaking tube 17 is employed as the signaling or indicating means. One of the transmitters and receivers 18 of the speaking tube is located at a position adjacent the phonograph while the other receiver and transmitter is located near the projecting machine, whereby either operator may communicate directly with the other. The transmitter and receiver 18 adjacent the phonograph is also preferably so located as to receive sounds emitted by the phonograph, whereby the operator of the moving picture machine may hear such sounds at the other transmitter and receiver. In place of the speaking tube 17, any other intercommunicating means may be employed.

In the modification shown in Figure 3, the signaling device comprises a buzzer or bell 19 located adjacent the

projecting machine within cabinet 9, suitable controlling means, such as a push button 20, located adjacent the phonograph, and conductors 21 connecting the buzzer or bell 19 and the push button 20. Current may be supplied to the conductors 21 by means of a battery 15, as in the indicating means disclosed in Figure 1. A suitable code of signals may be adopted, whereby the operator of the phonograph may communicate desired information to the operator of the motion picture machine by the use of this form of my invention.

In the modification shown in Figure 4, the signaling or indicating device comprises a receiver, preferably in the form of hearing tubes 22, a collecting horn 23 preferably supported from cabinet 9 with the mouth thereof located outside of the cabinet, and a sound conveying tube 24 connecting the small end of the collecting horn with the hearing tubes 22. During the operation of the combined apparatus, the operator of the motion picture machine having applied tubes 22 to his ears, the sounds emitted by the phonograph are collected by the horn 23 and transmitted to the operator by means of the conveying tube 24 and hearing tubes 22.

It will be obvious that the signaling or indicating devices shown in Figures 3 and 4 may be used conjointly to advantage in the combined sound reproducing and motion picture projecting apparatus disclosed; that shown in Figure 3 for the purpose of notifying the operator of the motion picture machine when to start the same; and that of Figure 4 for the purpose of apprising the operator of the motion picture machine of the conditions of operation of the phonograph and thereby enabling him to maintain the combined apparatus in synchronism during the operation thereof. My invention

also comprises the conjoint use of any or all the signaling or indicating devices shown in Figures 1 to 4 in combined apparatus of the type disclosed herein.

While I have shown several different forms of my invention, it is to be understood that the same may be embodied in many modifications without any departure from the spirit and scope of my invention.

Having now described my invention, what I claim as new and desire to protect by Letters Patent of the United States is as follows:-

1. In a device of the character described, the combination with a motion picture projecting apparatus, sound <sup>5944</sup> ~~electrically connected to both of said apparatus for maintaining the same~~ reproducing apparatus, and means ~~for maintaining the said~~ apparatus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent one of said apparatus from a <sup>6-16-15</sup> ~~relatively distant~~ position, <sup>adjacent</sup> ~~the other of said apparatus~~ <sup>6-16-15</sup> substantially as described.

2. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, <sup>electrically connected to both of said apparatus for maintaining the same</sup> sound reproducing apparatus adjacent said screen, and means <sup>5944</sup> ~~for maintaining the said apparatus~~ in synchronism, of an <sup>independent in its action of sound reproduction and 6-16-15</sup> indicating device, comprising means adapted to transmit indications to a position adjacent one of said apparatus from a <sup>adjacent the other of said apparatus 6-16-15</sup> ~~relatively distant~~ position, substantially as described.

<sup>Cancelled 6-16-15</sup>  
3. In a device of the ~~character~~ described, the combination with a motion picture projecting apparatus, <sup>phonographically connected to both of said apparatus for maintaining the same</sup> ~~phonographic~~ apparatus, and means <sup>5944</sup> ~~for maintaining the said appar-~~

6-16-15  
atus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent one of said apparatus from a relatively distant position, substantially as described.

4. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, <sup>apparatus connected to said apparatus for maintaining the same</sup> a phonographic apparatus adjacent said screen, and means for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent one of said apparatus from a (relatively distant position, substantially as described.

3.  
5. In a device of the character described, the combination with a motion picture projecting apparatus, sound <sup>electrically connected to both of said apparatus for maintaining the same</sup> reproducing apparatus, and means for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent said moving picture apparatus from a relatively distant position, substantially as described.

4.  
6. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, sound <sup>electrically connected to both of said apparatus for maintaining the same</sup> reproducing apparatus adjacent said screen, and means for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent said moving picture projecting apparatus from a relatively distant position, substantially as described.

Cancelled 6-16-15

7. In a device of the character described, the combination with a motion picture projecting apparatus, phonograph<sup>graphically</sup> apparatus, and means <sup>absolutely connected to both of said apparatus for maintaining the same</sup> for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent said moving picture apparatus <sup>adj. the phonograph apparatus</sup> from a (relatively distant) position, substantially as described.

8. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonograph<sup>graphically</sup> apparatus adjacent said screen, and means <sup>absolutely connected to both of said apparatus for maintaining the same</sup> for maintaining said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent said moving picture projecting apparatus <sup>adj. the phonograph apparatus</sup> from a (relatively distant) position, substantially as described.

9. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonograph<sup>graphically</sup> apparatus adjacent said screen, and means <sup>absolutely connected to both of said apparatus for maintaining the same</sup> for maintaining said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications from a position adjacent one of said apparatus to a position adjacent the other of said apparatus, substantially as described.

10. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonograph<sup>graphically</sup> apparatus adjacent said screen, and means <sup>absolutely connected to both of said apparatus for maintaining the same</sup> for maintaining said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications from a position adjacent one of said apparatus to a position adjacent the other of said apparatus, substantially as described.

8/10/14  
electrically connected to ~~being said apparatus~~ <sup>phonographic apparatus</sup> ~~phonographic apparatus~~ adjacent said screen, and means for maintaining said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications from a position adjacent the phonographic apparatus to a position adjacent the moving picture projecting apparatus, substantially as described.

5.  
11. In a device of the character described, the combination with a motion picture projecting apparatus, sound ~~electrically connected to being said apparatus~~ <sup>reproducing apparatus</sup>, and means for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit audible indications to a position adjacent one of said apparatus to a relatively distant position, substantially as described. 6-16-15

6  
12. In a device of the character described, the combination with a motion picture projecting apparatus, a substantially sound proof <sup>cabinet</sup> ~~compartment~~ for the motion picture projecting apparatus, sound reproducing apparatus, and means for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent said motion picture projecting apparatus and within said cabinet from a position without said cabinet, substantially as described. 6-16-15

7  
13. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, ~~electrically connected to being said apparatus~~ <sup>sound reproducing apparatus</sup> adjacent said screen, and means for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit and- 11/11/14



ible indications to a position adjacent one of said apparatus  
position adjacent one of said apparatus 6-16-15  
from a relatively distant position, substantially as de-  
scribed.

*Cancelled 6-16-15*

14. In a device of the character described, the combination with a motion picture projecting apparatus, phonographically connected to both of said apparatus for maintaining the same in synchronism, of an indicating device comprising means adapted to transmit audible indications to a position adjacent one of said apparatus from a (relatively distant) position, substantially as described.

15. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonographically connected to both of said apparatus for maintaining the same in synchronism, of an indicating device comprising means adapted to transmit audible indications to a position adjacent one of said apparatus from a (relatively distant) position, substantially as described.

16. In a device of the character described, the combination with a motion picture projecting apparatus, sound reproducing apparatus, and means for maintaining the same in synchronism, of an indicating device comprising means adapted to transmit audible indications to a position adjacent said moving picture apparatus from a relatively distant position, substantially as described.

17. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, sound

reproducing apparatus adjacent said screen, and means for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit audible indications to a position adjacent said moving picture projecting apparatus from a <sup>position adjacent said sound reproducing apparatus</sup> relatively distant position, substantially as described.

*Cancelled - 6-1-11*  
18. In a device of the character described, the combination with a motion picture projecting apparatus, phonographic apparatus, and means <sup>phonographically connected to both of said apparatus for maintaining the same</sup> for maintaining the said apparatus in synchronism, of an indicating device comprising means adapted to transmit audible indications to a position adjacent said moving picture apparatus from a (relatively distant) position, substantially as described.

19. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonographic apparatus adjacent said screen, and means <sup>phonographically connected to both of said apparatus for maintaining the same</sup> for maintaining said apparatus in synchronism, of an indicating device comprising means adapted to transmit audible indications to a position adjacent said moving picture projecting apparatus from a (relatively distant) position, substantially as described.

20. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonographic apparatus adjacent said screen, and means <sup>phonographically connected to both of said apparatus for maintaining the same</sup> for maintaining said apparatus in synchronism, of an indicating device comprising means adapted to transmit audible indications

from a position adjacent one of said apparatus to a position adjacent the other of said apparatus, substantially as described.

21. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonograph apparatus <sup>electrically connected to both of said apparatus for maintaining the same</sup> adjacent said screen, and means ~~for maintaining said apparatus~~ <sup>for maintaining the same</sup> in synchronism, of an indicating device comprising means adapted to transmit audible indications from a position adjacent the phonographic apparatus to a position adjacent the moving picture projecting apparatus, substantially as described.

22. In a device of the character described, the combination with a motion picture projecting apparatus, a substantially sound proof compartment for the motion picture projecting apparatus, sound reproducing apparatus, and means <sup>Col. 11:15</sup> ~~for maintaining the said apparatus~~ <sup>for maintaining the same</sup> in synchronism, of an indicating device comprising means adapted to transmit audible indications to a position adjacent said motion picture projecting apparatus and within said cabinet from a position without said cabinet, substantially as described.

23. In a device of the character described, the combination with a motion picture projecting apparatus, sound reproducing apparatus, and means <sup>electrically connected to both of said apparatus for maintaining the same</sup> ~~for maintaining the said apparatus~~ <sup>for maintaining the same</sup> in synchronism, of intercommunicating means between a position adjacent said sound reproducing apparatus and a position adjacent said moving picture projecting apparatus, substantially as described.

24. In a device of the character described, the combination with a motion picture projecting apparatus, sound

reproducing apparatus, and mechanical means for maintaining said apparatus in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent one of said apparatus from a relatively distant position, substantially as described. See 23

25. In a device of the character described, the combination with a motion picture projecting apparatus, sound reproducing apparatus, and means including a mechanical connection between said apparatus for maintaining the same in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent one of said apparatus from a relatively distant position, substantially as described. See 24

26. In a device of the character described, the combination with a motion picture projecting apparatus, a substantially sound proof compartment for the motion picture projecting apparatus, sound reproducing apparatus, and means including a mechanical connection between said apparatus for maintaining the same in synchronism, of an indicating device comprising means adapted to transmit indications to a position adjacent said motion picture projecting apparatus and within said cabinet from a position without said cabinet, substantially as described.

27. In a device of the character described, the combination with a motion picture projecting apparatus, sound reproducing apparatus, and mechanical means for maintaining the said apparatus in synchronism, of intercommunicating means between a position adjacent said sound reproducing See 25

apparatus and a position adjacent said moving picture projecting apparatus, substantially as described.

12. ~~28.~~

28. In a device of the character described, the combination with a motion picture projecting apparatus, sound ~~reproducing apparatus, and means for maintaining the said apparatus in synchronism, of a speaking tube extending from a position adjacent one of said apparatus to a position adjacent the other of said apparatus, substantially as described.~~ *546*

*Cancelled 5/9/14*

29. In a device of the character described, the combination with a motion picture projecting apparatus, sound reproducing apparatus, and mechanical means for maintaining the said apparatus in synchronism, of a speaking tube extending from a position adjacent one of said apparatus to a position adjacent the other of said apparatus, substantially as described.

30. In a device of the character described, the combination with a motion picture projecting apparatus, sound reproducing apparatus, and means including a mechanical connection between said apparatus for maintaining the same in synchronism, of a speaking tube extending from a position adjacent one of said apparatus to a position adjacent the other of said apparatus, substantially as described.

13. ~~31.~~

31. In a device of the character described, the combination with a motion picture projecting apparatus, a substantially sound proof ~~compartment~~ *chamber 6-16-15* for said apparatus, sound ~~reproducing apparatus, and means for maintaining the said apparatus in synchronism, of a speaking tube extending from a~~ *chamber connected to each of said apparatus for maintaining the same* *246*

position adjacent said sound reproducing apparatus to a position adjacent said motion picture projecting apparatus and within said <sup>Cabinet 6-16-15</sup> compartment, substantially as described.

14. ~~26~~

32. In a device of the character described, the combination with a motion picture projecting apparatus, a substantially sound proof <sup>Cabinet 6-16-15</sup> compartment for said apparatus, a screen on which the pictures are projected by said apparatus, <sup>effectively connected to each of 3/14/15</sup> phonographic apparatus adjacent said screen, and means <sup>A</sup> comprising a mechanical connection between said apparatus for maintaining the same in synchronism, of intercommunicating means between a position adjacent said phonographic apparatus and a position adjacent said motion picture projecting apparatus and within said <sup>Cabinet 6-16-15</sup> compartment, substantially as described.

15. ~~27~~

33. In a device of the character described, the combination with a motion picture projecting apparatus, a substantially sound proof <sup>Cabinet 6-16-15</sup> compartment for said apparatus, a screen on which the pictures are projected by said apparatus, <sup>effectively connected to each of 3/14/15</sup> phonographic apparatus adjacent said screen, and means <sup>A</sup> comprising a mechanical connection between said apparatus for maintaining the same in synchronism, of a speaking tube extending from a position adjacent said phonographic apparatus to a position adjacent said motion picture projecting apparatus and within said <sup>Cabinet 6-16-15</sup> compartment, substantially as described.

28  
34.

<sup>Cancelled 6-16-15</sup>  
In a device of the character described, the combination with a motion picture projecting apparatus, sound reproducing apparatus, and means <sup>effectively connected to both of said apparatus for maintaining the same in synchronism</sup> for maintaining the said apparatus in synchronism, of an indicating device comprising means for transmitting indications to a position adjacent one

<sup>relatively distant from each other</sup>  
of said apparatus from a ~~relatively distant~~ position and  
for transmitting indications to a position adjacent the  
other of said apparatus from a position relatively distant  
from said latter position, substantially as described.

*Insect A* 6 Lines 24 30 31 and 32 <sup>5/19/48</sup>

This specification signed and witnessed this 27th day of March 1913

Witnesseth:

*Daniel Higham*

1. *William A. Hardy*
2. *Harry J. Laidlaw*

## Oath.

State of New Jersey }  
County of Essex } ss.,

DANIEL HIGHAM, the above named  
petitioner, being duly sworn, deposes and says that he is a citizen of the United  
States, and a resident of East Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the  
improvements in

### COMBINED SOUND REPRODUCING AND MOTION PICTURE PROJECTING APPARATUS

described and claimed in the annexed specification; that he does not know and  
does not believe that the same was ever known or used before his invention or  
discovery thereof; or patented or described in any printed publication in the  
United States of America or any foreign country before his invention or  
discovery thereof, or more than two years prior to this application; or patented  
in any country foreign to the United States on an application filed more than  
twelve months prior to this application; or in public use or on sale in the  
United States for more than two years prior to this application; and that no  
application for patent upon said invention has been filed by him or his legal  
representatives or assigns in any foreign country.

*Daniel Higham*  
Sworn to and subscribed before me this 27th day of March 1913

[Seal]

*Harry J. Laidlaw*  
Notary Public.

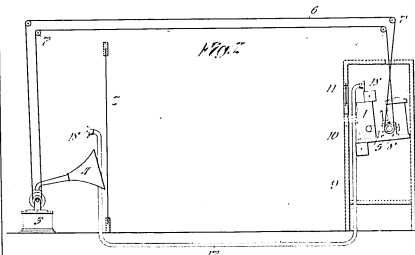
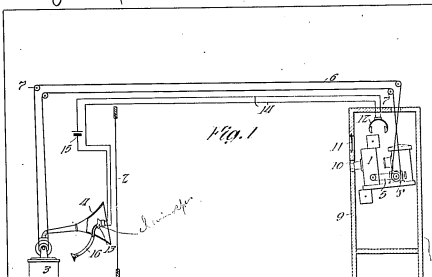
NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917



mil Jul 917

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2

191  
471



**Witnesses:**

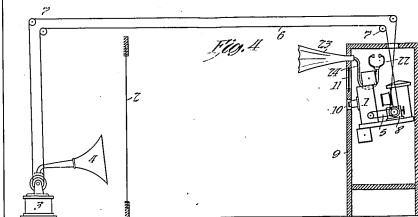
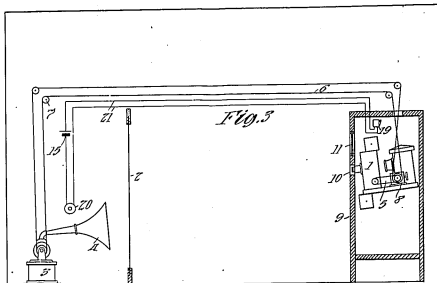
Tracy Dean  
William A. Hardy

**Inventor:**

Daniel Higham  
by J. J. J. or Holden  
his Atty.

Pat. 917

757,502  
2



Witnesses:

James L. Lewis

William A. Hardy

Inventor

Daniel Brigham

By Dyer & Golden

His Atty.

Div. 7. Room 312

2-200

M.

Paper No. 2

Address only  
"The Commissioner of Patents,  
Washington, D. C."

All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

MAY 21, 1913.



Dyer & Holden,

Edison Office Building,

Orange, New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

Daniel Higham, filed March 29, 1912, Combined Sound Reproducing

and Motion Picture Projecting Apparatus, Serial #757,502.

*E. B. Willard*

Commissioner of Patents.

Claims 1 to 10, 23 and 34 are rejected on each of the patents to

McDonnell, #945,976, Jan. 11, 1910;

(88-16.2);

Dunkes, et al., (British), #23,276, of 1908;

(88-Syn. Dig.);

Vollmann, (German), #209,621, May 7, 1909;

(88-Syn. Dig.).

Claim 12 is rejected on McDonnell or Vollmann, in which the indications might be located in the picture machine house without involving any invention. In fact such an arrangement would seem to be present in McDonnell.

Claims 11, 13 to 22, 28 to 31 are rejected in view of the art showing the use of means for transferring indications from one machine to the other and also in view of the well known use of the speaking tube between distant points. Thus it is thought to involve no invention whatever to employ this old means of communication between the two operators in applicant's device.

The description of the synchronizing means as "mechanical" does not lend any patentability to the claims, as there is no particular combination between this means and the communicating means. The speaking tube would serve just as well with other

forms of synchronisers as with the mechanical means. Likewise, the mechanical synchronising means is not dependent on the indicating means for its operation, but acts as an independent element. Thus claims 24 to 27, 29, 30, 32, and 33 are rejected as aggregations.

Claims 1 to 8, 11 to 19, 22, 24 to 26 are criticized as being indefinite as to the point from which the indications are transmitted. This point should be designated as being located at the phonograph.

Claim 34 is not clearly stated, because of the indefinite reference to the distant point in line 6. This should be more definitely stated so as to agree with the description of the location of the same point in lines 7-8. Then too the indefinite language in lines 8-9 should not be used, but the location should be referred to in the same manner as in lines 5 and 6.

As to the location of the tube so as to transmit the sounds reproduced by the phonograph to the ears of the picture machine operator, attention is called to the familiar "dictophone", by which a conversation has been communicated to a third party at a distance. The incorporation of such an expedient in the old synchronizing combination is not seen to involve any invention.

J. R. M.

Examiner.

IN THE UNITED STATES PATENT OFFICE.

DANIEL HIGHAM, )  
COMBINED SOUND REPRODUCING )  
AND MOTION PICTURE PROJECTING ) Room No. 312  
APPARATUS, )  
Filed March 29, 1913. )  
Serial No. 757,502. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of May 21,  
1913, please amend the above entitled case as follows:

In lines 3 and 4, claims 1, 3, 5, 7, 11,  
14, 16, 18, 23, 28 and 34, and lines 4 and 5, claims 2,  
4, 6, 12, 13, 15, 17, 22 and 31, cancel the expression  
"means for maintaining the said apparatus" and insert in  
place thereof - means operatively connected to both of  
said apparatus for maintaining the same. In lines  
4 and 5, claims 8, 9, 10, 19, 20 and 21, cancel "means for  
maintaining said apparatus" and insert in place thereof  
- means operatively connected to both of said apparatus for  
maintaining the same - .

Claims 32 and 33, lines 5 and 6, cancel  
"comprising a mechanical connection between " and insert  
- operatively connected to both of - .

Claim 34, line 6, cancel "relatively distant";  
same line after "position" insert - relatively distant  
from said first position - .

Cancel claims 24 to 27 inclusive, and 29 and  
30.

Renumber claims 28, 31, 32, 33 and 34 as  
24, 25, 26, 27 and 28 respectively.

Add the following claims:

28. 29. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonographic apparatus adjacent said screen, and means operatively connected to both of said apparatus for maintaining the same in synchronism, of means for transmitting audible indications from the phonographic apparatus to a position adjacent the motion picture projecting apparatus comprising a transmitting member located in a position to receive sounds emitted by the phonographic apparatus and a receiver located adjacent the motion picture apparatus, substantially as described.

*Cancelled 6-16-18*  
A 30. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonographic apparatus adjacent said screen, and means operatively connected to both of said apparatus for maintaining the same in synchronism, of means for transmitting audible indications from the phonographic apparatus to a position adjacent the motion picture projecting apparatus comprising a transmitting member located adjacent the horn of the phonographic apparatus and a receiver located adjacent the motion picture projecting apparatus, substantially as described.

31. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonographic apparatus adjacent said screen, and means operatively connected to both of said apparatus for maintaining the same in synchronism, of means for transmitting

audible indications from the phonographic apparatus to a position adjacent the motion picture projecting apparatus comprising a transmitting member located (within) the horn of the phonographic apparatus and a receiving member located adjacent the motion picture projecting apparatus, substantially as described.

32. In a device of the character described, the combination with a motion picture projecting apparatus, a screen on which the pictures are projected by said apparatus, phonographic apparatus adjacent said screen, and means operatively connected to both of said apparatus for maintaining the same in synchronism, of means for transmitting audible indications from the phonographic apparatus to a position adjacent the motion picture projecting apparatus comprising a transmitting member located (within) the horn of the phonographic apparatus and a receiving member located adjacent the motion picture projecting apparatus, and means connected with said transmitting member and extending exteriorly of said horn whereby an operator at the phonographic apparatus is enabled to impart instructions to an operator at the motion picture projecting apparatus, substantially as described.

#### REMARKS

The claims as now presented all specify the combination with a motion picture projecting apparatus, sound reproducing apparatus and means operatively connected with both of said apparatus for maintaining the same in synchronism, of an indicating device comprising means for transmitting indications to a position adjacent one of said apparatus either from a relatively distant position or from a position adjacent the other of said apparatus. None of

the references discloses either this combination or means for transmitting audible indications to either of the apparatus from the other apparatus or from a relatively distant position as called for in some of the claims. In view of the numerous advantages resulting from the combination described in the claims, which advantages are clearly brought out in the specification, and also in view of the fact that, in spite of these advantages, heretofore no one has apparently devised or employed this combination, it is submitted that the production of such combination involved invention and that the incorporation of the indicating device in the synchronizing combination was not an obvious expedient as implied by the Examiner in the last Office action.

Each of the references merely discloses a pair or pairs of co-operating continuously rotating pointers, one pointer of each pair being rotated by the phonographic apparatus and the other by the moving picture apparatus, the relative position of the pointers indicating whether or not the phonograph and moving picture apparatus are in synchronism. The indicating means disclosed in the references are incapable of the functions of applicant's indicating device and moreover, none of the references discloses the indicating means in the combination described in applicant's claims. Applicant's indicating means, in its preferred form, enables the operator of the two apparatus to signal each other or one of the operators to signal to the other at any time, either before the apparatus are set into operation or during operation thereof.

Claims 12 and 22 and claims 25, 26 and 27



(original claims 21, 32 and 33) further distinguish from the references by specifying a substantially sound proof compartment for the motion picture projecting apparatus. The use of the sound proof compartment is especially advantageous in combined apparatus of the character disclosed herein as the sounds due to the operation of the motion picture apparatus are thereby confined to such compartment and accordingly do not interfere with the proper appreciation of the reproduction of the phonographic apparatus by an audience.

The objection made in the first paragraph on page 2 of the last Office action to claims 1 to 8, 11 to 13 and 22 as being indefinite as to the point from which the indications are transmitted and the requirement that this point should be designated as being located at the phonograph are believed to be unwarranted and it is requested that the same be withdrawn. Applicant's invention is not limited to the exact construction disclosed in the drawings which are merely illustrative. The statement of invention is broad enough to include the employment of indicating or signaling means whereby indications or signals may be transmitted to a position adjacent either the motion picture projecting apparatus or the sound reproducing apparatus from a relatively distant position, whether the latter position is located at one of said apparatus or at a distance from both of said apparatus; (see lines 1 to 8, page 2 of the specification). While it may be true that the most practical manner of carrying out the invention is to employ an indicating system in which the indications or signals are transmitted from the phonograph to a position adjacent the motion picture apparatus, it might, under some circumstances, be preferable to transmit the

indications or signals from some other position.

It is thought that there is no indefinite reference to the distant points or positions in claim 28 (original claim 34) for the reasons above stated, and as amended, this claim seems to be quite clearly drawn.

While it is not admitted that original claims 24 to 27, 29, 30, 32 and 33 covered aggregations, all but the last two of these claims have been canceled as the subject matter therein seems to be sufficiently covered in other of the claims, while original claims 32 and 33 have been amended to overcome any possibility of the same being held to cover aggregations.

New claims 29 to 32 presented herewith are believed to clearly and patentably differentiate from the references of record and are thought necessary in order to adequately protect applicant in his invention. None of the references discloses the combinations set forth in these claims comprising means operatively connected to both the phonographic and motion picture projecting apparatus for maintaining the same in synchronism and means for transmitting audible indications from the phonographic apparatus to a position adjacent the motion picture apparatus, which means comprises a transmitting member located in a position to receive sounds emitted by the phonographic apparatus and a receiver located adjacent the motion picture projecting apparatus. Claim 30 also specifies that the transmitting member is located adjacent the horn of the phonographic apparatus while claims 31 and 32 specify that the transmitting member is located within the horn of the phonographic apparatus. Claim 32 further distinguishes from the references by specifying means connected with the transmitting member and extending exteriorly of the horn

whereby an operator at the phonographic apparatus is enabled to impart instructions to an operator at the motion picture projecting apparatus.

For the above reasons, further consideration and allowance of the claims as now presented are requested.

Respectfully submitted,  
DANIEL HIGHAM,

By Dyer and Holden  
his Attorneys.

Orange, New Jersey,

May 18, 1914.

WAH-KGE

Div. 7 Room 312

2-360

X. Paper No. 4  
All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

Address only  
"The Commissioner of Patents,  
Washington, D. C.,  
and not my official name.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

June 25, 1914.



Dyer & Helden,

Mission Office Building,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of

Daniel Higham, filed March 20, 1912, Combined Sound Reproducing

and Motion Picture Projecting Apparatus, Serial #757,502.

Thomas Ewing,  
Commissioner of Patents.

14-3031

Case reconsidered as amended May 20, 1914.

All the claims are rejected as presenting nothing patentable in view of the art of record and the reasons previously stated. The statement that the two machines are maintained in synchronism by means operatively connected to both is not regarded as a patentable distinction in view of the old art showing the picture machine and phonograph so connected. See for instance:

Gluer et al., (Austrian), #38,733, Sep. 10, 1909; (1 sheet);  
Gaumont, #752,394, Feb. 16, 1904;  
(88-16.2).

Then to employ the indicating means of Vollman, Danks, & McDonnell in a synchronizing combination in which the two machines are operatively connected is thought not to amount to invention. This applies to claims 1 to 10, 12, 23, and 25. The claims involving a sound transmitting means as a signal device are likewise held not to distinguish patentably from the art by the statement above referred to. The use of a speaking tube is held to be very obvious in such a connection as described by applicant, and would readily suggest itself to the skilled operator. The speaking tube and electric bell are regarded as

equivalents and are both old and well known expedients. The branch tube shown in Fig. 1 is thought to involve only mechanical skill and is held not to be invention. Claim 32 is further rejected as relating to a form of invention (Fig. 1) that is different from the one originally elected by applicant, that is Fig. 2. The speaking tube was originally claimed, which is Fig. 2, whereas the branch tube 16 is found only in specific to Fig. 1 in which a telephonic circuit is employed. As to the location of the end of the tube near the horn so as to be capable of transmitting sounds either from the horn or from the lips of the operator, it is held to be a very obvious expedient to employ such a means to keep the operator informed as to the behavior of the phonograph in case he cannot hear the reproduction with his unaided ear. Then to so locate the end of the tube so as to be convenient to the phonograph attendant and also within range of the horn is regarded as an arrangement of the old tube not involving any inventive thought.

The objection stated on page 2, lines 6-9, of the last office letter is repeated.

Claim 34 is criticized on the same ground. If the one end of the speaking tube is not so located as to be accessible to the phonograph attendant, then the spirit of applicant's invention is lost. A distant point might be any point, regardless of any connection or relation to the reproduction of pictures and sounds; and this surely is not patentable.

JRM.

Examiner.

IN THE UNITED STATES PATENT OFFICE

Daniel Higham

COMBINED SOUND REPRODUCING AND  
MOTION PICTURE PROJECTING APPARATUS

Filed March 29, 1913

Room No. 312.

Serial No. 757,502

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
June 25, 1914, please amend the above entitled case as  
follows:-

Claim 1, line 6, cancel "relatively distant",  
and after "position" insert - adjacent the other of said  
apparatus - .

Claim 2, line 6, after "device" insert - independ-  
ent in its action of said apparatus and - . Line 8, can-  
cel "relatively distant position" and insert - position  
adjacent the other of said apparatus - .

Cancel claims 3 and 4.

Claim 5, line 6, cancel "relatively distant".  
Line 7, before the comma insert - adjacent the sound repro-  
ducing apparatus - .

Claim 6, line 6, after "device" insert - independ-  
ent in its action of said apparatus and - . Line 8, can-  
cel "relatively distant position" and insert - position  
adjacent the sound reproducing apparatus - .

Cancel claims 7, 8, 9 and 10.

Claim 11, line 6, cancel "relatively distant".  
Line 7, after "position" insert - adjacent the other of  
said apparatus - .

Claims 12, 22, 25, 26 and 27, line 3; claim 25,  
line 8; and claims 26 and 27, line 10, cancel "compartment"  
and insert - cabinet - .

Claim 13, line 8, cancel "relatively distant  
position" and insert - position adjacent the other of said  
apparatus - .

Cancel claims 14 and 15.

Claim 16, lines 6 and 7, cancel "relatively dis-  
tant". Line 7, after "position" insert - adjacent said  
sound reproducing apparatus - .

Claim 17, line 8, cancel "relatively distant  
position" and insert - position adjacent said sound repro-  
ducing apparatus - .

Cancel claims 18, 19, 20, 21, 28, 30, 31 and  
32.

Renumber claims 5, 6, 11, 12, 13, 16, 17, 22, 23,  
24, 25, 26, 27 and 29 as 3 to 16 inclusive respectively.

#### R E M A R K S

The claims now contained in this application have  
been amended so as to more clearly define applicant's in-  
vention, and also to obviate all objections set forth in  
the last two paragraphs of the last Office action. Several  
of the claims have been canceled, not because it is believed  
that these claims are anticipated by the references or are  
devoid of patentable subject matter, but because the remain-  
ing claims are believed to sufficiently cover the invention.

The cancellation of former claim 32 obviates the objections set forth in the first seven lines of page 2 of the last Office action.

It is submitted that applicant has evolved a new and patentable combination and that such combination is clearly described in the claims as now presented. While Gluer et al. and Gaumont disclose the combination of motion picture apparatus and phonographic apparatus connected by means for maintaining the same in synchronism, neither of these references discloses indicating means such as described herein in combination with such apparatus. The indicating means of Vollman, Duskes and McDonnell is not adapted for use in devices such as disclosed by Gluer and Gaumont or by the present application, where the motion picture apparatus and phonographic apparatus are operatively connected by means for maintaining such apparatus in synchronism, but are adapted only for use in devices where there is no operative connection between the motion picture mechanism and the phonographic mechanism. Moreover, as was indicated in the remarks accompanying the previous amendment, applicant's indicating means, in its preferred form, enables the operators of the two apparatus to signal to or communicate with each other, or one of the operators to signal to or communicate with the other operator at any time and with respect to various matters, which is not true of the indicating means of Vollman, Duskes and McDonnell.

Claims 2 and 4 further distinguish from the references by specifying that the indicating device is independent in its action of the motion picture apparatus and the sound reproducing or phonographic apparatus.



Claims 5, 7, 8, 9, 10 and 16 also further distinguish from the references by specifying means adapted to transmit audible indications from a position adjacent one apparatus to a position adjacent the other apparatus.

With respect to claims 6 and 10, none of the references discloses a sound proof cabinet for the motion picture apparatus and an indicating device comprising means adapted to transmit indications to a position adjacent the motion picture apparatus and within said cabinet from a position without the cabinet. These claims are broad enough to cover the form of the invention disclosed in Figure 4 where no part of the indicating means is disclosed adjacent the sound reproducing apparatus, as well as the forms disclosed in the other figures of the drawings. It is therefore not believed to be necessary to limit these claims by describing the transmitting means as located adjacent the sound reproducing apparatus.

In regard to claims 11 to 16 inclusive, none of the references discloses intercommunicating means or a speaking tube between a position adjacent one of the apparatus and a position adjacent the other apparatus. By this arrangement, the operator at either apparatus is enabled to communicate with the operator at the other. Claims 13 and 15 also specify a sound proof cabinet for the motion picture apparatus and describe the speaking tube as extending within such cabinet; while claim 14 describes a sound proof cabinet for the motion picture apparatus and intercommunicating means between a position adjacent the phonographic apparatus and a position adjacent the motion picture apparatus and within said cabinet.

While the invention described in the claims of this application is of a simple nature, it is both new and useful. In fact, applicant's invention is essential for the satisfactory operation of combined motion picture and phonographic apparatus connected in the manner described herein. Accordingly, it would seem that if it were very obvious to employ applicant's indicating means in the manner described, as indicated by the Examiner in the last Office action, this would have been done or disclosed in some publication prior to the date of this application. To applicant's knowledge, however, this is not the case.

In view of the above, further consideration and allowance are requested.

Respectfully submitted,

DANIEL HIGHAM

By

*Dyer and Holden*

His Attorneys

Orange, New Jersey

June 16, 1916

WH-JB

Div. 2 Room 312

Address only  
"The Commissioner of Patents,  
Washington, D. C."  
and not any official by name.

2-260

M.

Paper No. 8

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

97

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

July 8, 1915

Dyer &amp; Holden,

Mission Office Building,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Daniel Higham, filed March 29, 1913, Combined Sound Reproducing and

Motion Picture Projecting Apparatus, Serial No. 757,502.

Thomas Ewing  
Commissioner of Patents.

c 6-3011

Case reconsidered as amended June 17, 1915.

The claims are rejected on the references and for the reasons of record. It is an old practice for the operator at the picture machine to listen to the sound reproduction to see whether the two machines are in synchronism; and it is also considered an old practice for the operator at the one machine to call to the other operator in regard to the operation of the machines. Then all that applicant has done is to employ an old form of sound transmitting means to aid the picture machine operator in hearing the phonograph and the signals from the other operator. There is clearly thought to be no invention involved in this. Applicant refers to the picture machine booth as being sound-proof, but judging from the drawing this is hardly true because of the several openings in the walls of this housing. Applicant's housing would appear to be substantially the same as that ordinarily found in the moving picture theatre; and thus no patentability is recognized in this part of applicant's device. The desirability of preventing the noise of the picture machine from being heard by the audience is very obvious, and there is thought to be no invention involved in making this housing sound-proof if the noise of the picture machine should be found to be annoying.

JRM.

Teleph. Spig. tube, or signally  
app -

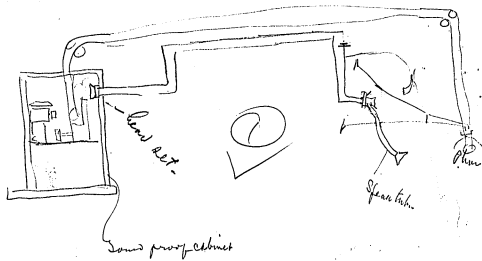
Screen, a phone communicating means ( )  
~~mechanical communication to~~  
the projecting mechanism for maintaining  
unison -

Let.  
Pent. 1913  
Jan 1913



Oct 1913

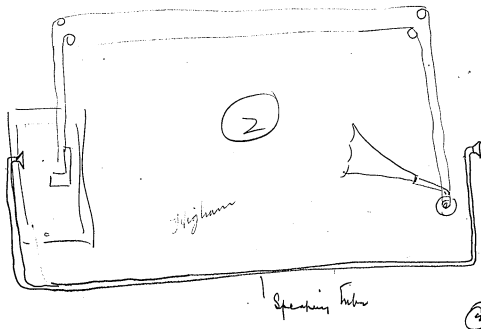


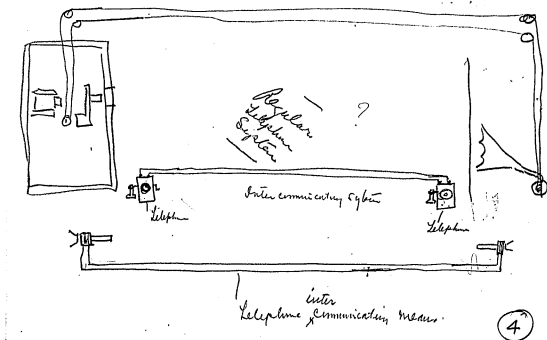
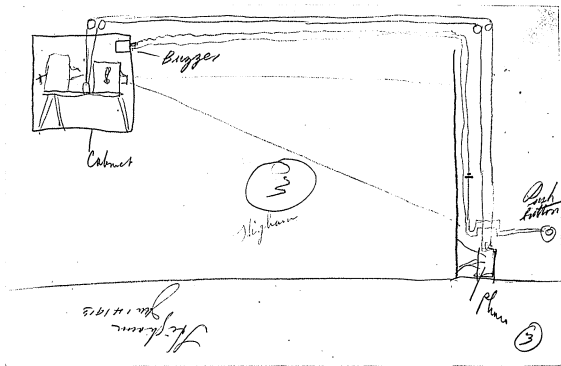


✓ This is committee room now

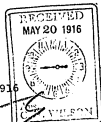
inter-communication

1





*How much will it cost — Wilson*  
*Wilson*



May 19, 1916

Mr. Edison:-

*How about this*

I send you herewith our copies of the papers in application (Folio 917) Serial No. 757,562, filed March 29, 1913, covering an invention of Daniel Higham relating to the Kinetophone. The invention consists in the employment of signaling means, such as a speaking tube, telephone, bell or buzzer, in combination with the Kinetophone, whereby the operator at one machine is enabled to communicate with the operator at the other machine.

The application is now up for amendment, and the question arises as to whether you are still interested in the invention and wish the prosecution of the application continued or wish to abandon the same. The Examiner in each of his actions in the application has rejected all the claims, and the chances of obtaining an allowance of any of the claims from the Examiner seem to be slight.

If you wish this case to be abandoned, will you kindly make a notation to that effect on the file wrapper.

WH-JS

*William A. Hardy*

*Mr. Edison*  
*Principally a question of*  
*whether you are interested going*  
*ahead with the Kinetophone business*  
*again. If you do it would*  
*be nice to obtain all patents*  
*possibly but if you*  
*in no way objecting any more*  
*with Higham for and there*  
*no to prosecute any more*  
*applications for and Higham*  
*of Higham's patent*  
*in this case*  
*W.A.H.*



May 26, 1916.

Mr. C. H. Wilson:

Referring to the annexed memorandum. The chance of obtaining an allowance of this case is very slight no matter whether we appeal it or not. We can carry it along for another year without an appeal, but it will then doubtless be necessary to appeal to the Board. This would cost us about \$20, including the cost of the trip to Washington. If unsuccessful, an appeal to the Commissioner of Patents could be taken during the following year at an expense of about \$40. If unsuccessful there, it would hardly be worth while to appeal any further.

*Belos Holden*

ENCLOS.

DH/JU

*Mr. Wilson  
Please note costs and when  
if we choose go ahead or drop it.  
CHW  
JW*

*Abandon  
JW*

*Mr Wilson*



Held

Note - Mr Edison notation  
"abandon" on memo must attached.

5/29 CHW.

LEGAL DEPARTMENT

THOMAS A. EDISON  
THOMAS A. EDISON, INC.  
BATES MANUFACTURING CO.  
EDISON STORAGE BATTERY CO.  
EDISON PORTLAND CEMENT CO.  
EDISON PHONOGRAPH WORKS

TELEPHONE 808 ORANGE  
Cable Address "EDLEAL" ORANGE

DELOS HOLDEN  
GENERAL COUNSEL  
FRED SCHIMMANN  
HENRY CARAHAN  
WILLIAM A. HARDY  
COUNSEL

ORANGE, N. J. June 16, 1916

Mr. Daniel Higham,  
315 West 46th Street,  
New York, N. Y.

Dear Mr. Higham:-

On June 2nd I wrote you asking you to stop in and see me, but as I have not heard from you nor seen you, it occurred to me that my letter may have miscarried. What I want to see you about is an application of yours entitled Combined Sound Reproducing and Motion Picture Projecting Apparatus, Serial No. 757,502, filed March 29, 1913. This case is due for amendment before July 8th, and I should accordingly like to see you at your earliest convenience. We are of the opinion that this case should be dropped, and if it is not convenient for you to come over here, I shall be glad to send you prints of the drawings and a copy of the last Office action so that you may advise us whether or not you wish to have the application dropped.

Yours very truly,

FE-JS

*Frederick Schumann*

*Approve dropping above case.  
Daniel Higham*

Telephone conference with  
Daniel Higham on June 12, 1916  
Re Higham's new address.  
# 248 Springdale Ave  
East Orange, N.J.

Mr. Higham advised me  
that the letter relative to dropping  
application Folio 917 had been  
mailed to him from his  
former N.Y. address, but he  
had not yet received them.  
When I explained to him what  
the letters were about he  
said it would be all  
right as far as he was  
concerned to abandon this  
application and that when  
he received above letters he  
would return same with  
notation thereon to that effect.  
Wm. C. Hardy  
6/19/16.

**Patent Series**  
**Patent Application Files**

Folio # 918      Molds

Serial #:          760624

Primary Applicant: Edison, Thomas A

Date Executed:    4/10/1913

[PHOTOCOPY]

Folio No. 918

Serial No. 760 624

Applicant.

Thomas A. Edison

Address.

Menlo Park  
New Jersey, N.J.

Title Holds

Filed April 12, 1913

Examiner's Room No. 762

Assignee

Ass't Exec.

Recorded

Liber

Page

Patent No. 918

Issued

July 31, 1916

ACTIONS.

1. Rejected Oct. 16-1913 Lost this one
2. Amended Sep. 8-1914 "Doab"
3. Rejected Oct. 6-1914 lost this one
4. Amended Aug. 24, 1915 lost this one
5. Final Rejection Aug. 31, 1915 20
6. 21
7. 22
8. 23
9. 24
10. 25
11. 26
12. 27
13. 28
14. 29
15. 30

VAULT

DYER & HOLDEN  
ORANGE, NEW JERSEY.

# Petition.

To the Commissioner of Patents:

Your Petitioner **THOMAS A. EDISON**  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

- MOLDS -

set forth in the annexed specification; and he hereby appoints Dyer & Holden, (Registration No. 3244), a firm composed of Frank L. Dyer and Belos Holden, whose address is Edison Office Building, Orange, New Jersey, his attorneys with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

*Thos. A. Edison*

# S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented certain new and useful improvements in MOLDS, of which the following is a description:

My invention relates to molds, and more particularly to molds for use in the manufacture of sound records of the disc type. In forming these records, it is common to make a copper matrix by electroplating on a master record previously rendered electroconductive by a coating of graphite or other suitable means, and to strengthen this matrix with a backing of steel or other suitable material to give the same sufficient rigidity for use as a stamp or die to impress the record into the record material. Various means have been suggested for securing the matrix to the backing, the molds of one type heretofore proposed comprising a ring or clamping member secured to the backing and having a projecting portion or flange overlying the periphery of the matrix. The molds of this type, as heretofore constructed, are defective by reason of the failure to provide a perfectly tight joint between the ring and matrix, the ring engaging the matrix only in spots, with the result that a small amount of the fluid with which the molds are cleaned and also of the plastic composition from which the records are formed finds its way to and becomes located between the adjacent or contacting surfaces of the matrix and backing. By reason of this defect, even if these surfaces are trued so as to normally lie in substantially perfect contact with each other, as described in my

copending application, Serial No. 632,366, filed June 10, 1911, an uneven surface is produced in the matrix and the record formed therefrom when said parts are subjected to the high pressure necessary to impress a record into the plastic material from which the duplicate sound records are formed. The unevenness of the record made in this way produces objectionable sounds, such as the rough surface noises frequently heard in sound records, when the records are reproduced.

The principal object of my invention is to eliminate the above defect. This is accomplished by forming a seal to prevent the passage of cleaning fluid, record composition, or other material between the matrix and backing, the preferred embodiment of my invention comprising a gasket of soft metal, such as lead, compressed between the matrix and the ring, or other suitable clamping member, secured to the backing. Other objects of my invention will appear more fully in the following specification and appended claims:

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawing forming a part of this specification and in which -

Fig. 1 represents a central vertical sectional view showing a mold embodying my invention;

Fig. 2 represents a plan view thereof; and

Fig. 3 represents a fragmentary view similar to that of Fig. 1 but drawn on an enlarged scale.

In all of the views like parts are designated by the same reference numerals.

Referring to the drawings, the matrix 1 bears against the backing plate 2. A clamping ring 3 is



secured to the backing plate 2 by a plurality of screws or other suitable fastening members 4, the ring 3 being provided with a lip or flange 5 overlying the periphery of the matrix. The screws 4 are located only a short distance apart and extend entirely around the ring 3 so that the latter can be very effectively held in clamping position. For a mold 10 inches in diameter, the screws 4 are placed about 1 inch apart. The ring 3, as shown, is preferably provided with tapered recesses 6 in which the heads of the screws are located, the screws lying entirely below the upper surface of the ring. The portion of the ring through which the screws extend is preferably provided with an annular downwardly extending flange-like portion 7 which fits within a correspondingly shaped recess 8 in the top of backing plate 2. The gasket 9 forms the desired seal between the flange 5 of the ring 3 and the matrix 1. This gasket, as hereinbefore stated, should be made of yielding compressible material and is preferably formed of lead, suitable lead wire for forming the same being easily obtainable in the market.

In assembling the mold and matrix, a piece of lead wire is placed between the flange 5 and the periphery of the matrix 1, after which the mold is placed in a press and subjected to a pressure sufficient to cause the lead wire to shape itself to any irregularities which may occur in the portions of the flange and matrix contacted by it. A suitable pressure for this purpose, when the gasket is formed of lead, is about 600 lbs. per square inch. After the lead has been thus compressed, the mold is removed from the press and the screws 4 are drawn up so as to compress the gasket 9 firmly between the flange 5 and the periphery of the matrix, a perfect seal being thus pro-

duced at the periphery of the matrix to prevent the passage of record composition or other material between the matrix and backing. In order to secure an even finish around the inner edge of the flange 6, the portion of the lead wire which is forced within the said edge during the pressing operation is preferably cut away by any suitable cutting tool.

The center of the matrix may, if desired, be secured to the backing plate by means of sleeve 10 having a flange 11 seated in a depression in the top of the matrix, the sleeve 10 being preferably threaded into the backing plate as shown.

Many modifications may obviously be made in the specific structure herein disclosed without departing from the spirit of my invention, and I wish, therefore, not to be limited to the said specific structure. What I claim as new and desire to protect by Letters Patent is as follows:

1. In a device of the class described, the combination of a matrix, a backing therefor, and means detachably securing said matrix to said backing, said means forming a seal for preventing the passage of material between said matrix and backing, substantially as described. *Sound record 9/5/14* *9/5/14*
2. In a device of the class described, the combination of a matrix, a backing therefor, and means detachably securing said matrix to said backing, said means comprising a clamping member secured to said backing, and a gasket of yieldable material forming a seal between said clamping member and matrix, substantially as described.

3. In a device of the class described, the combination of a <sup>sound record 9/8/14</sup> matrix, a backing therefor, and means detachably securing said matrix to said backing, said means comprising a clamping member secured to said backing, and a gasket of soft metal forming a seal between said clamping member and matrix, substantially as described.

4. In a device of the class described, the combination of a <sup>sound record 9/8/14</sup> matrix, a backing therefor, and means detachably securing said matrix to said backing, said means comprising a clamping member secured to said backing and a gasket of lead forming a seal between said clamping member and matrix, substantially as described.

~~5. In a device of the class described, the combination of a matrix, a backing therefor, and means detachably securing the periphery of said matrix to said backing, said means forming a seal for preventing the passage of material between said matrix and said backing, substantially as described.~~

6. In a device of the class described, the combination of a <sup>sound record 9/8/14</sup> matrix, a backing therefor, and means securing said matrix to said backing, said means comprising a clamping ring surrounding said matrix and secured to said backing, and a gasket of yielding material forming a seal between said ring and matrix, substantially as described.

7. In a device of the class described, the combination of a <sup>sound record 9/8/14</sup> matrix, a backing therefor, and means securing said matrix to said backing, said means comprising a clamping ring surrounding said matrix and secured to said backing, and a gasket of soft metal forming a seal between said ring and matrix, substantially as described.

8. In a device of the class described, the combination of <sup>around and secured 9/8/4</sup> a matrix, a backing therefor, and means securing said matrix to said backing, said means comprising a ring surrounding said matrix and secured to said backing, and a gasket of lead compressed between said ring and matrix, substantially as described.

9. In a device of the class described, the combination of <sup>around and secured 9/8/4</sup> a matrix, a backing therefor, and means securing said matrix to said backing and forming a seal for preventing the passage of material between said matrix and backing, said means comprising a ring secured to said backing at a plurality of spaced points located entirely around said ring the adjacent points being spaced <sup>approximately one inch</sup> ~~only~~ <sup>apart</sup> ~~a short distance~~, substantially as described. 9/8/4

10. In a device of the class described, the combination of <sup>around and secured 9/8/4</sup> a matrix, a backing therefor, and means securing said matrix to said backing and <sup>preventing the passage of material</sup> ~~forming a seal~~ for preventing the passage of material between said matrix and backing, said means comprising a ring secured to said backing by a plurality of fastening members located short distances apart entirely around said ring, substantially as described. 9/8/4

This specification signed and witnessed this 10<sup>th</sup> day of April 1913

Witnesseth:

Thos. A. Edison

1. Frederick Bachmann

2. Mary J. Laidlaw

**Oath.**

State of New Jersey } ss.,  
County of Essex

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in MOLDs

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Thos. A. Edison  
Sworn to and subscribed before me this 10<sup>th</sup> day of April 1913

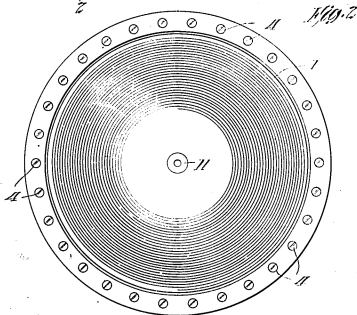
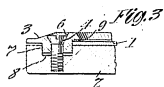
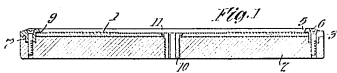
(Seal)

Mary J. Laidlaw  
Notary Public.

NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

Vol. 918

12-



**Witnesses:**  
*Ernest S. Green*  
*Fredrick Bachmann*

**Inventor:**  
*Thomas A. Edison*  
*by Dyer & Holden*  
*His Atty.*

Div. 15 Room 308

Address only  
"The Commissioner of Patents,  
Washington, D. C."

2-300

Paper No. 2

H. D. B. Ms.

All communications respecting this  
application should give the serial number,  
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Oct. 16, 1913

U. S. PATENT OFFICE

OCT 16 1913

MAILED

Dyer & Holden,

Edson Office Building,

Orange, New Jersey

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 760,624, filed Apr. 12, 1913, for

Molde

4-6851

Commissioner of Patents.

Claims 1, 5, 9 and 10 are rejected on the patent to

Wicks, 941,291, Nov. 23, 1909, (18-5.3), Fig. 2, which  
shows a matrix, a backing, and a ring for securing the matrix to  
the backing. Overhanging shoulder 21 forms a seal for preventing  
the creeping of material.

Claim 2 is rejected on the same reference, since the use  
of a separate gasket, if desired, would not require invention, being  
an expected expedient wherever a tight juncture is desired. Note  
may be made, for instance, of

Petit, 602,337, Feb. 4, 1902, (18-5.6), Fig. 2, gasket  
5, and

Simpson, 459,313, Sept. 8, 1891, (25-122), Fig. 3 and  
line 73, specifically lead.

Claims 3, 4 and 6 to 8, inclusive, are rejected on Wicks  
for the same reason noted in connection with claim 2.

x

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
MOLDS, ) Room No. 308.  
Filed April 12, 1913, )  
Serial No. 760,624. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of  
October 16, 1913, please amend the above entitled case as  
follows:

In line 2, claim 1, after "of a" insert  
- sound record -, and in line 3, same claim, after "means"  
insert - comprising yieldable material - .

✓ In line 2, claim 2, after "of a" insert  
- sound record --

✓ In line 2, claim 3, after "of a" insert  
- sound record --

✓ In line 2, claim 4, after "of a" insert  
- sound record - .

Rewrite claim 5 as follows:

A

5. In a device of the class described, the combination of a matrix, a backing therefor, and means securing said matrix to said backing, said means comprising a member surrounding said matrix and secured to said backing and a gasket of yieldable material compressed between said member and said matrix whereby said material is caused to conform to the portions of said member and said matrix contacted by it, substantially as described.

✓ In line 2, claim 5, after "of a" insert  
- sound record --



✓ In line 2, claim 7, after "of a" insert  
- sound record - .  
✓ In line 2, claim 8, after "of a" insert - sound  
record - .  
✓ In line 2, claim 9, after "of a" insert  
✓ sound record -; and in lines 7 and 8, same claim, change  
"only a short distance" to - approximately one inch - .  
In line 2, claim 10, after "of a" insert  
✓ sound record -; and in line 3, same claim, after "and"  
insert - comprising yieldable material - .

#### R E M A R K S

After a careful consideration of the references, it is thought that the claims as now presented are clearly patentable. Applicant's device is primarily, though not exclusively, designed for molding at a higher pressure than that heretofore employed in the molding of sound records of shellac composition, applicant's device being adapted, for example, to mold sound records of hard composition such as that disclosed in U. S. patent to Aylsworth No. 1,046,137 dated December 3, 1912. With such high pressures as applicant had in mind, applicant has found that the shoulder 21 in the device disclosed in the Wickes patent does not prevent the creeping of the record material between the matrix and the backing. The patent to Petit does not show packing material arranged in the manner set forth in the claims and the relevancy of the Simpson patent is <sup>not</sup> understood.

All of the claims are thought to clearly point out the patentable features of applicant's invention. Claims 1 to 8 inclusive and claim 10 specify yieldable material forming a seal, a feature not shown by Wickes. Claim 9 specifies that the points at which the ring is

secured to the backing are spaced approximately one inch apart. In the patent to Wickes, the members 19' are spaced so far apart that they are unable to secure the ring 6 against the matrix with sufficient firmness to prevent creeping of the record material between the matrix and backing even when very moderate pressures are used in molding. The patents to Petit and Simpson are so irrelevant that further discussion of the same is thought unnecessary.

For the reasons set forth above, it is thought that all the claims are patentable; and reconsideration and allowance are accordingly respectfully requested.

Respectfully submitted,

THOMAS A. EDISON,

By Dyer & Halden  
his Attorneys

Orange, New Jersey,

September 8, 1914.

FB-KCK

Div. 15 Room 308

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not my official by name.

2-280

H. D. B. Mo.

Paper No. 4

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Oct. 6, 1914.

U. S. PATENT OFFICE,  
OCT 6 1914  
MAILED.

Dyer & Holden,

Edison Office Building,

Orange, New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 760,624, filed Apr. 12, 1913, for

Holde.

Thomas Edison

Commissioner of Patents.

4-5421

In response to the amendment filed Sept. 9, 1914:

Claims 1, 2, 5, 6, 9 and 10 are rejected on the references  
of record. The difference is trifling.

234718

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

MOIDS

Room No. 308.

Filed April 12, 1913

Serial No. 760,624

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
October 6, 1914.

The invention was clearly differentiated from the references in the last Office action, and the Examiner apparently admits that the construction specified in the claims is not shown in the references. As pointed out in the last amendment, the invention claimed is superior to the prior art, especially when high pressures are used in the molding operation, in that it prevents the creeping of material between the matrix and backing and thereby insures a better record. See the second paragraph on page 1 of the specification.

"A new combination of old elements by which a new and useful result is produced, or an old result is obtained in a more facile, economical and efficient way, may be protected by patent as securely as a new machine or composition of matter." National Hollow Brake Beam Co. v. Interchangeable Brake Beam Co., 106 F. 693; 45 C.C.A. 544 (8th Cir.); Kinloch Tel. Co. et al. v. Western Electric Co., 113 F. 659; 51 C. C. A. 369 (8th Cir.); Ide et al. v. Trorlight, Duncker & Renard Carpet Co. et al., 115 F. 137; 53 C.C.A.

341 (8th Cir.); Anderson v. Collins, 122 F. 451; 58 C.O.A.  
669 (8th Cir.).

For the above reasons, all the claims are thought  
to be patentable, and reconsideration and allowance are  
respectfully requested.

Respectfully submitted,

THOMAS A. EDISON

By

Dyer & Holden

His Attorneys

Orange, N. J.

August 24, 1915

FB-JS

Div. 15 Room 308

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-200

M. P. R. - Mc

Paper No. 6

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

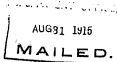
WASHINGTON

August 31, 1915

Dyer & Holden,

Edison Office Building,

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Ser. No. 760,624, filed April 12, 1913, for

Molds.

*Thomas Ewing*  
Commissioner of Patents.

6-5001

In reply to the letter filed August 25, 1915:

Claims 1, 2, 5, 6, 9, and 10 are finally rejected on the  
references and for the reasons of record.

**Patent Series**

**Patent Application Files**

Folio # 939      Alternating Current Rectifier and Rectifying System

U.S. Patent #: 1182894

Primary Applicant: Chesler, Jerry

Date Executed: 7/22/1913

Halden —

I want one of the Legal  
Dept detailed at once to  
file patents on new  
Rectifier — Too many  
Rubbys necks around  
see Durand

2 down

Delivered 11/1/1910



**Patent Series**  
**Patent Application Files**

Folio # 943      Toy Guns

U.S. Patent #:    1086727

Primary Applicant: Palmer, Harry B

Date Executed:    9/3/1913

Dear Holden:-

Palmer will give you  
what papers you want. Bradley  
co. want to close the deal as soon  
as possible so do what you can.

Sincerely,

Will. Edison

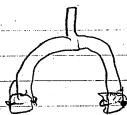
**Patent Series**  
**Patent Application Files**

Folio # 952      Friction-Speed Governor

U.S. Patent #: 1290138

Primary Applicant: Edison, Thomas A

Date Executed: 11/21/1913



Ivory sword points on  
government of our  
new machine

Recd by me  
Nov. 10, 1913.

J. B. Buchanan

## Brake Shoe

1.

The invention consists of a pair of channel faced brake shoes loosely mounted (pivotally) in the open ends of a horse shoe shaped hanger, said hanger being mounted by a swivel connection to an arm pivoted at or near its center to the frame of the phonograph. This hanger and pivoted arm is so arranged that the centrifugal action of the governor balls tending to fly outward will cause a glass hardened steel governor disk to be brought into contact with the faces of the brake shoes and slow down the speed of the phonograph to its predetermined speed.

These brake shoes are made of ivory because of its non-wearing qualities and the faces or wearing

2.

surfaces of these brake shoes are provided with vertical channels or grooves for the purpose of reducing the friction between the glass hardened governor disk and the brake shoes and to carry off the oil which accumulates on the surface of said disk.

The pivoted arm in which is mounted the revolved hanger is controlled by the usual type of speed regulating arm common to the Edison type of phonograph.

**Patent Series**  
**Patent Application Files**

Folio # 964      Methods and Means for Treating Ores

Serial #:          817976

Primary Applicant: Edison, Thomas A

Date Executed:   1/28/1914

Folio No. 964

Serial No. 817976

Applicant.

Address.

Thomas A. Edison

Llewellyn Park

West Orange, N. J.

Title Methods and Means for Treating Cere

Filed February 11-1914

Examiner's Room No. \_\_\_\_\_

Assignee \_\_\_\_\_

Ass'g't Exec. \_\_\_\_\_

Recorded \_\_\_\_\_

Liber \_\_\_\_\_

Page \_\_\_\_\_

Patent No. Abandoned Issued April 24, 1919

# ACTIONS.

1 Office letter March 19, 1914 16

2 Amended March 16, 1915 17

3 Office letter April 8, 1915 18

Amended March 17, 1916 19

Office letter March 25, 1916 20

Letter to Office March 29, 1916 21

Rejected April 29, 1916 22

Amended April 27, 1917 23

Rejected May 9, 1917 24

Amended May 6, 1918 25

Final Rejection May 15, 1918 26

12 \_\_\_\_\_ 27

13 \_\_\_\_\_ 28

14 \_\_\_\_\_ 29

15 \_\_\_\_\_ 30

**VAULT**

EVER & HOLDEN,  
ORANGE, NEW JERSEY



# Petition.

To the Commissioner of Patents:

Your Petitioner **THOMAS A. EDISON**,  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey,

prays that letters patent may be granted to him for the improvements in

- METHODS AND MEANS FOR TREATING ORES -

set forth in the annexed specification; and he hereby appoints Dyer & Holden,  
(Registration No. 3244), a firm composed of Frank L. Dyer and Belos  
Holden, whose address is Edison Office Building, Orange, New Jersey, his  
attorneys with full power of substitution and revocation, to prosecute this  
application, to make alterations and amendments therein, to receive the patent,  
and to transact all business in the Patent Office connected therewith.

*Thos A. Edison*

## SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in METHODS AND MEANS FOR TREATING ORES, of which the following is a description:-

My invention relates to the treatment of ores and more especially to improved methods and means for treating ores hydraulically. While equally adaptable to the treatment of ores rich in metals, my invention is especially adapted for the economical and profitable treatment of ores containing such a low percentage of metals as would render their treatment by methods heretofore employed commercially unsuccessful. By my invention, the material or tailings forming the dumps of mines may be profitably worked and this is one of the principal uses to which I intend to apply my invention.

The principal object of my invention is the provision of an improved, efficient and economical method of treating ores including several novel steps, whereby a greater percentage of the metals or valuable materials may be obtained and separated from the gangue or worthless material thereof than has heretofore been possible.

Another object of my invention is the provision of improved apparatus for carrying out my improved method and the various steps involved therein. A still further object of my invention is to provide an improved method and means for treating ores hydraulically and which will be economical in the use of water.

I will now describe in general, the steps comprising my preferred method, although it is to be understood that certain of these steps may either be omitted or replaced by other steps without any departure from my invention, as will hereinafter appear.

The crude or other ore to be treated is first crushed, preferably by a set of coarse rolls, the material fine enough to pass through these rolls without being crushed, however, being preferably first separated from the rest of the ore. The material so separated and the crushed ore are then subjected to the effects of a substantially horizontal and uniform flow of liquid, being preferably introduced into such flow from above at the same place, whereby the fine and light ore constituents will be washed from the heavier ore constituents. The fine material thus washed away will be partly held in suspension in the liquid as slimes and partly carried on the surface thereof as scum; the remainder or heavier of the ore constituents will, under the combined action of gravity and the transporting effect of the flow of liquid, be separated and deposited in such flow in accordance with their sizes, shapes and densities in a manner similar to that described in my co-pending application Serial No. 699,109, filed May 23, 1918 and entitled Method and Means for Concentrating Ores. The ore introduced into this flow of liquid is preferably retarded in its descent therein, in any suitable manner, so as to increase the length of time the same will be subjected to the washing and transporting effects of the flow of liquid. Certain large pieces of ore, owing to their shape, will pass through the coarse rolls without being crushed. These pieces of ore, together with other smaller and heavier pieces, will

be deposited in the flow of liquid near the place of introduction of the ore into said flow, and all such pieces of ore are preferably removed from the liquid and the finer of these pieces are then preferably separated from the coarser pieces in any suitable manner. The coarser pieces are then recrushed by the coarse rolls and the finer pieces are preferably recrushed by a set of fine rolls to a finer size. The recrushed material is preferably introduced from above into a second substantially horizontal and uniform flow of liquid, preferably moving at a considerably slower rate than the first flow. Liquid carrying the fine material washed away from the ore introduced into the first flow of liquid as scum and slimes, is preferably continuously fed from such flow of liquid into the second flow. All the ore constituents deposited in the first flow of liquid other than those conveyed to and recrushed by the coarse and fine rolls as above described, are also preferably removed and introduced into the second flow of liquid, preferably at the same place as the material crushed by the fine rolls. The descent of the ore introduced into the second flow of liquid is also preferably retarded in any suitable manner so as to increase the length of time it will be subjected to the effects of this flow. The second flow of liquid will act on the ore introduced therein in a manner similar to that described above with respect to the material introduced into the first flow of liquid; that is, the fine and light ore constituents will be washed away from the heavier or denser constituents and will be partly carried on the surface of the liquid as scum, and partly carried in suspension therein as slimes, while the denser constituents will be separated and deposited at different places in such flow of liquid in accordance with their densities, sizes, and shapes.

The denser of the ore constituents deposited in this flow of liquid, that is, those deposited adjacent the place of introduction of the ore therein, are preferably removed and separated into two portions according to size, which portions are respectively conveyed to and recrushed by the sets of coarse and fine rolls. The remainder of the ore constituents separated and deposited in the second flow of liquid may be further separated and concentrated in any suitable manner, as by respectively jiggling or tabling the different deposits of ore constituents of substantially equal densities, although I preferably carry out the further separation and concentration of these concentrates in a manner about to be described. Each of the flows of liquid above described is preferably maintained in an endless path and the volume of each flow is maintained substantially constant.

I preferably continuously separate a portion of the liquid from the flow of liquid moving at the slower rate at a point beyond the introduction of the ore therein. The liquid so separated will contain ore constituents in suspension which have been washed from the ore introduced into both flows of liquid. As but a comparatively small part of the liquid is so separated from the second flow of liquid, this flow, after the operations above described have been started, will soon become rich in slimes. This separated liquid may be treated in any suitable manner to separate the ore constituents held in suspension therein from <sup>the</sup> liquid. I preferably accomplish this, however, by causing such liquid to rise slowly upward against the action of gravity to form one or more columns of liquid, as by feeding the same into

one or more dewatering towers adjacent the lower ends thereof. The ore constituents will collect and settle more or less in such column or columns, in accordance with their densities. The overflow from the dewatering tower or towers is preferably fed back into the second flow of liquid. Material is drawn from each such tower at points of different height and treated in any desired manner to obtain the valuable material therein. I preferably discharge such material into the tops of columns of liquid of different height, which may properly be designated "settling columns". The material drawn from the dewatering tower at the lowest point is introduced into the top of the "settling column" of greatest height, the material drawn from the dewatering tower at a point next above the former point is introduced into the top of the "settling column" next in height, and so on; the material drawn from the dewatering tower at the point of greatest height being introduced into the "settling column" of least height. The "settling columns" are preferably of such height that the ore constituents contained in the material so introduced therein will settle in all the columns in substantially equal intervals of time. The settlings in these "settling columns" may be removed therefrom and further concentrated, or may be treated in any other desired manner, for example, by the well known cyaniding process or by smelting, to obtain the valuable metals contained therein.

All the ore constituents deposited in the flow of liquid flowing at the slower rate, other than that portion of such constituents deposited nearest the place of intro-

duction of the ore, are preferably removed from such flow and further separated or classified into different portions in accordance with their sizes, preferably by screening.

The screening operation is preferably carried out by slowly conveying such constituents successively over a plurality of screens of successively coarser mesh by flowing liquid. The different portions of ore constituents passing through the respective screens are preferably respectively separated and collected from the liquid by settling. All the ore constituents which do not pass through any of the screens are preferably conveyed to and recrushed to finer size by the set of fine rolls and again subjected to the steps above described. The greater portion of the liquid from the last of the screens is preferably returned to the first screen and again used in conveying the ore over and through the successive screens. The screening operation is so carried out that the ore constituents of the various portions of ore separated and collected from the liquid as settlings vary in size from very fine to relatively coarse. While I may further separate and concentrate these screenings or settlings in any suitable manner, as by jiggling or tabling, I preferably accomplish such concentration in the following manner:- The settlings of finest size are preferably subjected to a substantially uniform flow of liquid of little depth, the next coarser settlings to a substantially uniform flow of liquid of greater depth, and so on, the settlings of greatest size preferably being subjected to a substantially uniform flow of liquid which is deeper than the flow of liquid for any of the other settlings. By the combined effects of these flows of

liquid and gravity the respective settlings are separated and deposited as concentrates, middlings, and tailings in a manner similar to that described in my preceding application referred to above. The depths and rates of flow of the different flows of liquid to which the respective screenings or settlings are subjected are preferably such that the times in which all the settlings, from the finest to the coarsest inclusive, are separated and deposited, will be substantially equal. The concentrates and middlings so deposited may be treated in any well known manner to separate the valuable metals contained therein from the gangue or worthless material. 5/6/18

Under some circumstances, as for example, in small plants, I find it to be more economical to use but a single set of crushing rolls, in which event the step of subjecting the crushed ore to the first flow of liquid as above described is omitted and all material to be reorushed is, of course, returned to the single set of rolls.

There are always certain ore particles which, owing to their shape and other characteristics, will not sink in the liquid but will be carried on the surface thereof as scum. Accordingly, I preferably subject the liquid used in carrying out any of the above described steps to a skimming operation to collect such scum and then treat the latter in any suitable manner to obtain the valuable material contained therein. It is preferable, however, to subject the second flow of liquid to this operation. In this manner, I find that a great deal of the valuable material heretofore lost may be recovered.



3/10/15

*This step of my method may be carried out in any suitable manner and by any suitable apparatus.*

Although this step in my method may be carried out in any suitable manner, I preferably employ for this purpose the invention disclosed in an application of Henry B. Clifford, Serial No. 807,011, filed December 16, 1913 and entitled Slime or Tailing Separators, which has been found to be very efficient.

Further objects and features of my invention will appear more fully in the following description and appended claims.

In order that my invention may be more clearly understood, attention is hereby directed to the drawings accompanying and forming a part of this specification, which show the preferred apparatus for carrying out the preferred method in accordance with my invention, and in which -

Figure 1 is a somewhat diagrammatic view in side elevation of the complete apparatus;

Figure 2 is a plan view of the apparatus as shown in Figure 1, with parts omitted;

Figure 3 is an enlarged sectional view through the feed hopper for the crude ore, parts being shown in elevation;

Figure 4 is an enlarged sectional view on line 4-4 of Figure 1;

Figure 5 is an enlarged sectional view, partly in elevation, through the coarse rolls;

Figure 6 is a similar view through the fine rolls, the section being taken on line 6-6 of Figure 2;

Figure 7 is an enlarged plan view, partly broken away, of the crushing rolls and the parts associated therewith;

Figure 8 is a view in front elevation of the structure shown in Figure 7, parts being broken away;

Figure 9 is a view in side elevation, partly broken away, looking from the left in Figure 7;

Figure 10 is a similar view looking from the right in Figure 7;

Figure 11 is an enlarged plan view of the apparatus for washing and classifying the material crushed by the fine and coarse rolls;

Figure 12 is a front elevational view thereof;

Figure 13 is a sectional view on line 13-13 of Figure 11;

Figure 14 is a sectional view on line 14-14 of Figure 11;

Figure 15 is a sectional view on line 15-15 of Figure 11;

Figure 16 is a sectional view on line 16-16 of Figure 11;

Figure 17 is a diagrammatic view, partly in section, illustrating the operation of the dewatering and settling towers;

Figure 18 is a plan view of the screening device and the settling tanks associated therewith, parts being broken away;

Figure 19 is a sectional view on the broken line 19-19 of Figure 18;

Figure 20 is a sectional view on the broken line 20-20 of Figure 18;

Figure 21 is a central longitudinal vertical sectional view through the screening device;

Figure 22 is a diagrammatic view in perspective of the settling tanks of the screening device, illustrating the relative positions of these tanks;

Figure 23 is a central vertical longitudinal sectional view through the concentrator;

Figure 24 is a transverse sectional view through the concentrator on line 24-24 of Figure 25;

Figure 25 is a plan view of the concentrator;

Figure 26 is a longitudinal sectional view through one of the feed hoppers of the concentrator and the distributing member associated therewith; and

Figure 27 is a plan view of the distributing member for one of the feed hoppers of the concentrator.

In all the views of the drawings, corresponding parts are designated by the same reference characters.

Referring to Figures 1 and 2, my improved apparatus in the preferred form comprises in general an ore feeding device A, a set of coarse crushing rolls B, a set of fine crushing rolls C, washing tank D, washing and classifying tank E, a set or bank of dewatering towers F, sets or banks of settling towers G, H and I, a screening device J and a concentrator K.

Referring especially to Figure 3, the feeding device A comprises a feed hopper 1 mounted in a suitable support or framework 2 and into which the ore to be treated may be continuously fed in any suitable manner, as by means of an endless bucket conveyor 3. The conveyor 3 may be driven in any desired manner as by the shaft 4 of a motor 5. The hopper 1 is provided with an inclined

perforated bottom 6 through the perforations of which the smaller of the ore pieces fall onto an inclined chute 7. Mounted in an opening 8 at the lower end of hopper 1 is a corrugated feed roller 9, adapted to be continuously driven in the direction of the arrow from shaft 4, as by means of pulleys 10 and belt 11. An inclined "grizzly" is adapted to receive the ore discharged by the feed roller 9 and leads to the hopper 13 of the coarse rolls B. The "grizzly" 12 may be suitably supported from the framework 2 of the feeding device, as by a chain 14. The finer of the material discharged onto the false bottom 15 of the "grizzly" is adapted to pass therethrough and fall on the bottom 16, onto which the chute 7 is arranged to discharge. The lower end of the bottom 16 of the "grizzly" is connected with a chute 17 which connects with the discharge spout 18 of the coarse set of rolls B as shown in Figure 5.

Referring to Figures 5 to 10, the sets of coarse and fine crushing rolls B and C are mounted on a support or frame 19, preferably positioned at a lower level than the feeding device A, whereby the ore will be conveyed from the latter to the coarse set of rolls B by gravity. The rolls 20 of the coarse set of rolls B are preferably driven from an electric motor 21 by means of gearing 22, while the rolls 23 of the fine crushing rolls C are driven from another electric motor 24 by means of gearing 25. Reference character 26 represents an inclined screen suitably supported from the frame 19 and arranged to discharge at its lower end into the hopper 13 of the coarse set of rolls B. Beneath this screen is a chute or trough 27 to receive the material which passes through the screen and the lower end of this chute discharges into a second inclined trough or

chute 28 extending transversely therefrom and discharging into the hopper 29 of the set of fine crushing rolls C. The lower end of chute 28 is preferably provided with an adjustable gate 30 for controlling the discharge of the ore material therefrom to the rolls 23. Reference character 31 represents an inclined trough disposed at the upper end of screen 26, extending transversely thereto and adapted to discharge thereon. An endless bucket conveyor 32, preferably enclosed, as by a casing 33, is arranged to discharge material from its upper end into chute 31, the lower end of the conveyor being located below the support 19 where it receives material to be conveyed to the screen 26 as hereinafter described. Reference character 125 represents a pipe leading from the screening device and adapted to discharge into the hopper 29, the purpose of which will be hereinafter set forth. A discharge spout 35 is provided below the fine crushing rolls 23 and both this spout and the discharge, <sup>3/16/15</sup> chute <sup>advent 18</sup> 14 for the coarse rolls 20 extend through the support 19. Reference character 36 represents a main shaft driven from a motor 38 by gearing 37. Countershafts 39 and 40 are driven from the main shaft 36 by means of pulleys 41 and belt 42 and pulleys 43 and belt 44 respectively. Motor 38 and shafts 36, 39 and 40 are all preferably mounted on the support 19. The endless conveyor 32 is driven from the countershaft 39 by means of pulleys 45 and belt 46.

A washing tank D and a washing and classifying tank E are arranged below the support or frame 19 and are preferably formed by providing a single long horizontal tank with a transverse partition 47, as shown in Figs. 11

and 13. The inner ends of the tanks D and E are respectively located beneath the discharge spouts 18 and 35 of the crushing rolls B and C to receive the material discharged therefrom. Referring especially to Figures 11 to 16, each of the tanks D and E is provided with a longitudinally extending partition 48, the ends of which are spaced from the ends of the tank, whereby two elongated and parallel straight tank portions 49 and 50 connected at their ends are formed. Partitions 48 are preferably located nearer to one side of the tanks D and E than to the other side, whereby tank portions 49 are wider than the tank portions 50. A flow of liquid, such as water, is maintained in an endless path around the partition 48 of each tank by any suitable means. I preferably provide the water wheels 51 for this purpose, the shafts of which are suitably journaled in one side of the tanks and the partitions 48. The water wheels 51 are respectively driven to produce substantially uniform flows of liquid in the tanks D and E in the directions indicated by the arrows in Fig. 11 by any suitable means such as pulleys 52 and 53 which in turn are driven from counter-shafts 39 and 40 by pulley 55 and belt 54 and pulley 56 and belt 57 respectively. At each end of the partition 48 in each of the tanks D and E, are arranged vertical baffles 58 extending transversely across the tank portion 49, which baffles act to break up the eddies and whirls in the flows of liquid and render the same substantially uniform throughout its depth. Beneath each of the discharge spouts 18 and 35 in the tank portions 49 is arranged a vertical series of baffle boards 59 successively inclined in opposite directions. These baffle boards act to retard the action of gravity on the material discharged from the spouts and thereby increase the length of time such material will be sub-

jected to the washing and transporting effects of the flows of liquid in tank portions 49. As clearly shown in Figures 14 to 16, the bottom of the portion 49 of each of the tanks D and E is formed by inclined side pieces 60 and 61 while the bottom of each tank portion 50 is horizontal. Beneath the baffles 59 in each tank portion 49 and to the bottom of the latter is secured a large block 62, preferably of the shape shown in Figs. 11 and 13, whereby a large pocket 63 is formed at the inner end of each tank between the block and the partition 47. A series of substantially equally spaced smaller blocks 64 is secured to the bottom of each tank portion 49 between the block 62 and the outer end of the tank portion to form a series of smaller pockets 65. A stationary transverse perforated partition 66 is provided in tank E between the outer end thereof and baffles 58 and adjacent this partition is a vertically adjustable gate 67 having perforations corresponding in number and size with those in partition 66. Any suitable means is provided for adjusting gate 67 whereby the effective area of the perforations in gate 66 may be regulated. Preferably, however, I provide the upper end of gate 67 with racks 68, one at each side of the gate, which racks are engaged by pinions 69 on a shaft 70 mounted in bearings 71 on the sides of tank E. One end of shaft 70 is provided with a crank 72 whereby the shaft may be readily operated to adjust gate 68. Reference character 73 represents a Y-tube or pipe, the branches of which respectively communicate with the large pockets 63 at the inner ends of tanks D and E. The Y-pipe is adapted to remove the material deposited in pockets 63 and to discharge the same onto the bucket conveyor 32 to be returned to the crushing rolls. Referring to Figure 4, 74 indicates the end of the main branch of the Y-pipe which

discharges into a pocket 75 carried by the casing 33 of the bucket conveyor 32. The lower end of pocket 75 discharges through an opening 76 in the casing 33 onto the buckets of conveyor 32. Any suitable means such as a pump (not shown) may be provided in the Y-pipe 75 for withdrawing the material from the pockets 63. Reference character 77 represents a main pipe having a plurality of branches 78, each communicating with one of the pockets 65 in tank D. The upper end of pipe 77 extends into the discharge spout 35 beneath the fine crushing rolls C. A pump 79 is preferably provided in pipe 77 to draw the material from the pockets 65 through pipe 77 and discharge the same into the spout 35. A pipe 80 is provided with a plurality of branches 81 each communicating with one of the pockets 65 of tank E, and this pipe is adapted to discharge onto a long inclined trough 82 leading to the screening device J.

A pipe 83 extends through the bottom of tank E between the partition 66 and the outer end of the tank. The material at the right of partition 66 is conveyed through this pipe 83 to a header or main pipe 84 surrounding the bank of dewatering towers F and located adjacent the lower ends thereof. The header 84 is provided with a plurality of branch pipes 85 corresponding in number to the dewatering towers, each of said branch pipes leading into one of the dewatering towers at its lower end and arranged to discharge upwardly therein as shown in Fig. 17. The dewatering towers F, as well as the settling towers G, H and I, are preferably supported at a lower level than tanks D and E on a support 86, whereby the material will



flow from tank E through pipes 83, 84 and 85 by gravity. The tops of towers F are at substantially the same level and the overflow therefrom is received in an open box-like structure or receptacle 87 through which the upper ends of the towers F extend in water tight engagement therewith. The overflow is conducted from receptacle 87 back into the tank E through a pipe 88 provided with a suitably operated pump 89. Reference characters 90, 91 and 92 represent pipes extending from towers F at different levels and through which material is adapted to be drawn to headers 93, 94 and 95 respectively. Headers 93, 94 and 95 are respectively connected by pipes 96, 97 and 98 to headers 99, 100 and 101 located above the settling towers G, H and I respectively. Each of the headers 99, 100 and 101 is provided with a plurality of pipes 102 corresponding in number to the number of the towers in the respective banks of settling towers, and each of these pipes is arranged to discharge into the upper end of one of the settling towers. The tops of settling towers G and H are above the levels of the respective points in towers F from which the pipes 90 and 91 lead, and consequently I provide each of the pipes 96 and 97 with a suitably operated pump 103 to draw the material from the towers F and discharge the same into the towers G and H. The tops of towers I are preferably lower than the points in towers F from which pipes 92 lead, and consequently it is not necessary to provide pipe 98 with a pump, as the material will flow therethrough

into the towers I by gravity. While I have shown three banks of settling towers G, H and I, I may use more or less than this number depending on the number of points at which I desire to draw the material from the dewatering towers F. Also, if desired, the tops of all the settling towers may be located below the respective points in towers F from which material is conveyed thereto. Each pipe 102 is provided with a suitable cut-off valve 103 and each of the settling towers with a similar valve or gate 104, suitable mechanism 105 being provided connecting the respective pairs of valves 103 and 104, whereby when one of these valves is closed the other will be opened and vice versa. The valves 104 divide each of the settling towers into two sections, and the section below the valve may be described as "settling sections", and the water in these sections "settling columns". As shown in Figure 17, valves 104 are so located that the "settling sections" of the bank G are longer than those of the bank H, and the "settling sections" of the latter are longer than those of bank I. Likewise, the sections of the towers above the valves 104 in bank G are longer than those in bank H, and the sections of the towers above the valves in bank H are longer than those in bank I. The operation of the device is preferably carried out in such a way that the "settling sections" of all the towers will be substantially full at all times. The valves 104 are opened and thereupon valves 103 closed when the sections of the towers above the valves 104 have been substantially filled with the material drawn from the dewatering towers F. As shown in Fig. 17, conditions are substantially at a point where valves 104 of each settling tower should be opened and the corresponding valve 103 closed. The solid material

contained in the liquid discharged into the tops of towers G is denser than that in the liquid discharged into the tops of towers H, and the latter denser than that contained in the liquid discharged into the tops of towers I. Accordingly, the "settling sections" of the towers of each bank are made of such length that the solid material discharged therein with the liquid from the dewatering towers F will settle therein in substantially equal intervals of time, whereby in each of the banks of towers like operations may be performed substantially simultaneously and the operations of the entire dewatering and settling apparatus, comprising the banks of towers F, G, H and I and the parts associated therewith, may be carried out uniformly and successively. Each of the settling towers is preferably provided adjacent its lower end with one or more pipes 106 having a valve (not shown) through which the settlings may be withdrawn and further concentrated or treated in any other desired manner. A considerable distance above the pipes 106 each settling tower is preferably provided with another discharge pipe 107 also provided with a valve (not shown) and through which the liquid containing material of substantially no value, or which it would be impracticable to treat further, may be withdrawn. The material is withdrawn through pipes 106 and 107 only immediately after valves 104 are opened and the amount withdrawn through these pipes at any time does not exceed the amount above the respective valves 104 just before the latter are opened. Accordingly, the level of the liquid in the settling towers never falls below the valves 104.

The screening device J comprises a suitable frame 108 in which is supported a plurality of inclined screens

109, preferably eight in number, arranged one above the other. Each screen is supported in a trough-like member 110 above the bottom 111 thereof so as to form a channel or trough 112 below the screen. Each screen is inclined in an opposite direction to the one above and below it and the upper end of each screen is preferably vertically above the lower end of the screen below it, as clearly shown in Figure 21. The screens are successively coarser in mesh, the top or the first screen preferably being 100 mesh, the second 80 mesh, the third 60 mesh, the fourth 40 mesh, the fifth 30 mesh, the sixth 20 mesh, the seventh 16 mesh, and the last or eighth screen 8 mesh. Of course, the number and mesh of the screens may be varied to suit varying conditions, such as the size of the mill, the nature of the material being treated, etc. The incline of the screens should be slight, and I have found that best results are obtained by arranging the screens with a drop of a little less than one inch to the foot.

The lower end of trough 82 discharges onto a flaring trough or distributor board 113 arranged above the uppermost screen 109 and inclined oppositely thereto. This distributor board flares towards its lower end, where it is of substantially the same width as the first screen 109 as clearly shown in Fig. 18. Adjacent its lower end the distributor board is provided with a plurality of rows of spaced blocks 114 adjustably mounted thereon, as by means of pins 115 secured to the board 113 and on which the blocks are mounted in tight frictional engagement

therewith. The blocks in each row are staggered with respect to those in any adjacent row as shown in Fig. 18. The lower end of the distributor 113 discharges into a horizontal transversely extending trough 116 of substantially the same width as the uppermost screen 109. The trough 116 is provided with closed ends and an imperforate front wall, the bottom of the trough being substantially flush with the upper end of the first screen 109. By suitably adjusting blocks 114 on their pivots 115 the material will be discharged from the lower end of the flaring trough 113 throughout its width into the trough 116 in a plurality of fine and substantially equal streams, or, in effect, a thin uniform sheet. The rear wall of trough 116 is provided with a plurality of vertical openings or slots 117 staggered with respect to the last row of blocks 114 as shown in Fig. 19, and in each of the slots 117 is frictionally mounted a vertically adjustable gate 118. By properly adjusting gates 118 and blocks 114 the material will be discharged on the uppermost screen 109 in a substantially uniform sheet throughout the width thereof.

Referring especially to Fig. 21, the troughs 112 below the screens 109 discharge into horizontal transversely extending troughs 119 arranged under the lower end portion of the screens, and the screens 109 discharge into horizontal transversely extending troughs 120 located just beyond the lower end thereof.

The troughs 119 each leads to a settling tank or chamber and serves to discharge the ore material and the

water which have passed through the respective screen 109 into such tank. The settling tank for the first or uppermost screen is represented by reference character a, that for the second screen by b, and so on, the settling tank for the eighth or lowermost screen being represented by reference character h. Each trough 119 is provided with an adjustable gate 121 to control and regulate the flow of material therethrough. Each trough 120, except the one at the lower end of the last or eighth screen 109, is arranged to discharge the material received therein from the lower end of one screen 109 onto the upper end of the next screen through an opening 122 in its inner wall. The lowermost trough 120 discharges into a tank or settling chamber 123 through an inclined pipe 124. Each of the troughs 120 has an extension 125 communicating with the settling tank for the respective screen 109 from which material is discharged into the trough, or into the settling tank with which the adjacent trough 119 communicates. The extensions 125 of troughs 120 serve to convey the overflow from the tanks a, b, c etc. to the tops of the succeeding screens 109, where such overflow is utilized to assist in conveying the ore material over and through the screens, thereby effecting a very economical use of the water. The troughs 120 open into the respective settling tanks below the corresponding troughs 119, as shown in Figs. 19 and 20, whereby the level of the water in the tanks is maintained below the respective troughs 119, and the material will, in consequence, always flow by gravity through troughs 119 into the settling tanks. Also, in order that but little of the ore material discharged into the settling tanks shall be conveyed therefrom through troughs 120, the troughs 120

and 119 communicate with the settling tanks at opposite ends thereof, as shown in Figs. 18 and 22. As troughs 119 and 120 are substantially horizontal and the settling tanks a, b, c etc. are of substantially the same size, it will be apparent that tank a will be located at a higher level than tank b, tank b at a higher level than tank c, and so on, tank a being at a lower level than any of the others. For purposes of convenience, I have arranged the first two tanks a and b at the left side of the screening device, the next two c and d at the opposite or right side, the next two e and f at the left side, and the last two g and h at the right side. This arrangement of the settling tanks and the connections of the respective troughs 119 and 120 therewith are clearly shown in Figs. 18, 19, 20 and 22. A pipe 126 leads from the tank 123 adjacent the lower end thereof to the fine crushing rolls C, and the settlings in this tank, comprising ore material which has not passed through any of the screens 109, is pumped through pipe 126 to the fine rolls for recrushing by means of a pump 127 operated by a suitable motor 128. A pipe 129 leads from the tank 123 adjacent the top thereof and is arranged to discharge onto the trough 82, this pipe also being provided with a pump 130 preferably driven from motor 128, whereby the water from the upper portion of tank 123 will be discharged into trough 82 to be again utilized in conveying the ore material through the screening device.

A pipe 131 is connected to each of the settling tanks or chambers a, b, c-----h adjacent the lower ends thereof, and is adapted to convey the settlings therefrom to be further treated. These pipes preferably lead to a concentrating device about to be described, where the sett-

lings are further separated and concentrated.

The concentrating device preferably comprises a plurality of tank portions, one at least for the settlings from each of the settling tanks of the screening device. A substantially uniform flow of liquid is preferably maintained in each tank portion and the depths and rates of flow thereof are such that the settlings introduced therein from the respective settling tanks a, b, c, d, e, f, g and h will be separated and deposited therein in substantially equal intervals of time. Several of such tank portions are preferably provided in an endless substantially horizontal tank for each of the settling tanks a, b, c-----h of the screening device.

Referring to Figures 23 to 25, reference character 132 represents a plurality of endless and substantially horizontal tanks arranged adjacent each other in a frame 133 and so that each tank except one surrounds an adjacent tank. The tanks 132 correspond in number to the settling tanks a, b, c -----h, and the screens of the screening device. These tanks 132 are of progressively increasing depth from the innermost to the outermost tanks and this is preferably accomplished by providing all the tanks with a common bottom 134 inclined at an angle of substantially 45°, as shown in Figs. 23 and 24. Each pair of adjacent tanks is provided with a common wall 135. A substantially uniform flow of liquid is maintained in each tank 132 in the direction indicated by the arrows in Fig. 25, by any suitable means, such as the water wheels 136 mounted on a shaft 137 supported in the frame 133. These water wheels may be driven from a motor 138 by suitable connections com-



prising belts and pulleys 139. The liquid in the respective tanks from the innermost to the outermost is driven at progressively increasing rates and this is accomplished by using water wheels 136 of progressively increasing diameters, as shown in Figs. 23 and 25.

The finest screenings or settlings from the screening device, or those in the settling tank<sup>a</sup> are introduced into the innermost tank 132, the next in size into the tank 132 adjacent the innermost tank and so on, the coarsest ore constituents which pass through the screens, or the settlings in tank h, being introduced into the outermost tank 132. The finer ore constituents will, of course, sink more slowly in the liquid than those of greater size and, as stated above, the depths and rates of flow of the liquid for the ore constituents from the respective settling tanks a, b, c ----- h are such that the constituents will be separated and deposited as concentrates, middlings and tailings, in the manner<sup>3/4/15</sup> ~~set forth in my application~~ <sup>hereinbefore</sup> ~~above referred to~~, in substantially equal intervals of time. The ore constituents are preferably introduced into the flow of liquid in each tank 132 at a plurality of places by providing each pipe 131 with branches 140 extending above the long sections of the corresponding tank 132 and discharging the material into these sections from one or more points in each of these branches, as shown in Fig. 25. The material is preferably discharged from the branches 140 into hoppers 141, located above the respective tanks and from which it is fed by grooved or corrugated rollers 142 extending partially within the hoppers. The rollers 142 are preferably continuously rotated from the motor 138 by suitable means comprising the pulleys and belts 143. Each

of the hoppers is preferably provided with a vertically adjustable gate 144 located above the roller 142, for controlling the extent of the opening between its lower edge and the roller, to thereby regulate the feed of the ore constituents from the hopper. Several of these hoppers for as many different tanks 132 may be arranged in alignment and provided with discharge or feed rollers mounted on a single shaft, as shown in Fig. 25. The material from each hopper 141 is discharged by the roller 142 onto an inclined trough 145 of substantially the same width as the corresponding tank 132. The troughs 145 are provided with longitudinally grooved or fluted bottoms 146 and serve to introduce the material into the flows of liquid in substantially uniform sheets across substantially the entire width thereof. The action of the flowing liquid on the material introduced therein is the same as described in my application

3/14/15 <sup>and gravity separates the ore constituents into</sup> referred to above, and the concentrates, middlings and tailings, are preferably collected in pockets (not shown) such as shown at 150, 151 and 152 in Figure 23. 3/14/15

below and beyond each point of introduction of the ore, as described in said application. If desired, I may remove

the middlings and again introduce them into the flow of liquid in the manner set forth in my application referred to. 3/14/15

I preferably, however, remove the concentrates, middlings and tailings from the tanks by pipes 146', 147 and 148 <sup>through 146/15</sup> respectively, under the action of gravity or by suitable pumps (not shown). The tailings are discarded, the middlings

are either further treated in any desired manner or discarded according to the percentage of valuable material or metals therein, while the concentrates are collected and further treated in any suitable manner to extract the valuable materials therefrom. The pipes 146' are all 3/14/15

connected to a common pipe 149 whereby the concentrates may be readily collected.

In the operation of the apparatus described, the crude ore material to be treated is fed into the feed hopper 1 from a storehouse, dump, or other suitable source of supply, by the endless bucket conveyor 3. The feed roller 9 discharges the material from hopper 1 into hopper 13 for the coarse rolls 20 over the "grizzly" 12. The finer material which passes through the perforated bottom 6 of hopper 1 and the false bottom 15 of the "grizzly" is by-passed around the coarse rolls by chute 17 to the discharge spout 18 to join the material crushed by the rolls 20, and falls with the latter material into the inner end of the tank portion 49 of the washing tank or "first classifier" D and onto the baffle plates 59. Baffles 59 act to retard the descent of the material in the tank D, and thus increase the time during which the same is subjected to the washing and the transporting effects of the flow of liquid therein. Under the combined action of the flow of liquid and gravity, the heavier of the ore constituents will be separated and deposited in the pockets 63 and 65 in accordance with their shapes, sizes, and densities, while the lighter ore material will be carried away as scum on the surface of the liquid and as slimes suspended in the liquid. The ore constituents deposited in the pockets 65 of the tank D, together with a considerable amount of water, <sup>and 7/16/15</sup> are removed through pipes 78 and 77 and conveyed to spout 35 leading from the fine crushing rolls 23 and, together with the material crushed by the latter rolls, is discharged into the inner end of the washing and classifying tank or "second classifier" E. As in the tank D, the descent of the ore

material is retarded in tank E by the baffle plates 59 and the flow of liquid therein and gravity operate to separate and deposit the heavier ore constituents in accordance with their shapes, sizes, and densities in the pockets 63 and 65. The lighter ore constituents will also be separated from the heavier constituents in tank E and carried away by the flow of liquid, partly as scum on the surface thereof and partly as slimes suspended therein. As a considerable portion of the flow of liquid in tank D is conveyed to the flow of liquid in tank E, and as only a relatively small portion of the latter flow passes through the perforated gates 66 and 67, this latter flow of liquid and also the liquid separated therefrom beyond gates 66 and 67 will, after the operation of the apparatus is commenced, soon become rich in slimes. The surface of the flow of liquid in tank E is preferably subjected to a skimming operation to secure the valuable scum supported thereon, and for this purpose I <sup>employ any suitable skimming apparatus. The liquid</sup> ~~preferably employ the apparatus disclosed in the application~~ <sup>4/14/15</sup> ~~of Henry B. Clifford, hereinbefore referred to.~~ The liquid in any other part of the apparatus may, however, be subjected to this skimming operation <sup>3/14/15</sup> ~~and such operation may be performed by any other suitable apparatus than the one referred to.~~ The amount of liquid separated from the endless flow in tank E may be regulated as desired by adjusting the perforated gate 67 with respect to the stationary gate 66, as above described. The heaviest ore constituents deposited in tanks D and E, or those in pockets 63, are withdrawn through the Y-pipe 73 and discharged onto the endless bucket conveyor 32, by which they are carried to chute 31 and thence onto the screen 26. The material which passes over screen

26 is discharged into hopper 13 and recrushed by the coarse rolls 20, while the finer material which passes through screen 26 is conveyed by the trough 28 to the fine rolls 23 and recrushed thereby. The material deposited in the pockets 65 of tank E is conveyed through pipes 81 and 80, and discharged from the latter onto the trough 82 leading to the screening device J. The liquid rich in slimes beyond gates 66 and 67 is removed from tank E through the pipe 83 and conveyed to the header 84, from which it is fed, by branch pipes 85, upwardly against gravity in the dewatering towers F to form columns of liquid therein. The combined action of gravity and the rising liquid in the dewatering towers acts to separate the slimes more or less from the liquid, and the heavier slimes will settle and collect adjacent the lower end of the towers, those of medium weight will settle and collect above the heaviest slimes, while the lightest slimes will collect above those of medium weight, as indicated in Fig. 17. The liquid overflows from the tops of towers F into the receptacle 87 and is conveyed from the latter, by the pipe 88, into the tank E, or, if desired, into any other part of the apparatus.

As above described, liquid containing ore particles therein is drawn from the towers F and discharged into the settling towers G, H and I wherein the ore particles settle in substantially equal intervals of time. The liquid in the towers G, H and I containing valuable settlings is conveyed therefrom through pipes 106 for such further treatment as is necessary or desirable, while the liquid above that containing valuable settlings is with-

drawn, at suitable intervals, through the pipes 107 and may be discharged into another part of the apparatus such as the tank D or E and used again. The trough 82 discharges onto the inclined flaring distributor board 113 and the ore material is discharged from the lower end of the latter in a series of small equal streams and onto the first screen 109 in a substantially uniform sheet by reason of the proper adjustment of blocks 114 and gates 118, as described above. The material is then conveyed successively over the screens 109 of progressively increasing mesh, the ore constituents passing through the screens being conveyed through troughs 119 to the respective settling tanks a, b, g-----h. The overflows from the settling tanks a, b, g-----h are respectively returned to the succeeding screens through the troughs 120. The gates 121 are so adjusted and the flow of liquid through the entire screening device so regulated that the liquid will fill the troughs 112 below the screens 109 and just cover the screens, and thereby cause the ore material to be slowly rolled over the screens and thus cause as great a number as possible of the ore constituents to pass therethrough. It will be apparent that the screening device will operate to separate and collect the ore material in different portions according to size as settlings in the respective tanks a, b, g-----h: the finest settlings or the ore particles which pass through the 100 mesh screen 109 being collected in tank a, and the coarsest settlings or the ore particles which pass through the last or 8 mesh screen 109 being collected in tank h. The ore material which is too coarse to pass through any of the screens will be discharged from the last screen 109 into the lowest trough 120, and together with the liquid

overflowing from the last tank h will be conveyed through pipe 124 into the settling tank or chamber 123. The ore constituents quickly settle to the bottom of tank 123, and are conveyed through pipe 126 to the hopper 29 of the fine rolls 23 for recrushing. The liquid from the upper portion of tank 123 is conveyed through pipe 129 to the trough 32 and again used in conveying the ore material through the screening device J.

The settlings in tanks a, b, g---h are respectively conveyed through pipes 131 and discharged into the flows of liquid in the respective tanks 132 of the concentrator K. As above described, the settlings from tank a are discharged into the innermost tank 132 at a plurality of places through the hoppers 141 and over the fluted boards 146; the settlings next in size are discharged into the next tank 132 at a plurality of points, while the settlings of largest size, or those from the tank h, are discharged at a plurality of places into the outermost tank 132 containing the deepest flow of liquid. As above stated, the ore constituents discharged into the tanks 132 will, under the combined action of gravity and the transporting effect of the flows of liquid, be separated and deposited, <sup>in pockets 150, 151 and 152</sup> as concentrates, middlings, and tailings; the rates of flow and depths of the liquid in the different tanks being such that the ore constituents will be deposited in all the tanks in substantially equal intervals of time. The concentrates, <sup>from pockets 150, 151 and 152</sup> middlings and tailings are now drawn off <sup>7/4/15</sup> through the pipes 146, 147 and 148 respectively for further treatment in any desired manner or to be discarded as waste, as the case may be.

By my invention, the operations described herein may be carried on continuously and with a very economical use of water, this being of great importance in many mining districts. Furthermore, the proper adjustment and arrangement of the different gates, valves, motors, pumps and other devices in my apparatus renders it possible to obtain regularity and uniformity of the operations throughout the entire apparatus and to thus secure the best possible working conditions. By treating ore material in accordance with my invention, it is possible to separate a much greater percentage of the valuable constituents from the gangue than has heretofore been possible, and I have found that the ore material constituting the waste heaps or dumps of many existing mines, as well as other ore material which it has heretofore been considered impracticable to work from a commercial standpoint, may be commercially and profitably worked by my invention.

It is to be understood, of course, that the specific apparatus and method set forth herein and constituting the preferred embodiment of my invention are subject to many changes and modifications without any departure from the spirit of my invention and the scope of the appended claims.

Having now described my invention, what I claim as new therein and desire to protect by Letters Patent is as follows:-



*cancel* Canceled 4/27/17

1. The method of treating ore, which consists in introducing ore into a flow of liquid, whereby the lighter ore constituents will be washed away by the liquid and the denser ore constituents will be deposited in the liquid, separating the latter constituents into a plurality of portions according to size, (and separately treating such portions to obtain the valuable material thereof,) substantially as described.

*cancel*  
2. The method of treating ore, which consists in introducing ore into a flow of liquid, whereby the lighter ore constituents will be washed away by the liquid and the denser ore constituents will be deposited in the liquid, separating the latter constituents into a plurality of portions according to size by screening, and separately treating such portions to obtain the valuable material thereof, substantially as described.

*cancel*  
3. The method of treating ore, which consists in introducing ore into a flow of liquid, whereby the lighter ore constituents will be washed away by the liquid and the denser ore constituents will be deposited in the liquid, separating the latter constituents into a plurality of portions according to size, (and respectively introducing such portions into a plurality of flows of liquid, whereby the ore constituents of each of such portions will be separated and deposited according to their densities, substantially as described.

*cancel*  
4. The method of treating ore, which consists in ~~separating the lighter ore constituents from~~ introducing ore into a flow of liquid, whereby the lighter ~~the denser ore constituents, whereby~~ ore constituents will be washed away by the liquid and the denser ore constituents will be deposited in the liquid.)

separating the latter constituents into a plurality of portions according to size, and respectively introducing such portions into a plurality of flows of liquid, the depths and rates of which flows vary directly in proportion to the sizes of the ore constituents of the respective portions introduced therein, whereby the ore constituents of each of such portions will be separated and deposited according to their densities in substantially equal intervals of time, substantially as described

5. The method of treating ore, which consists in washing the lighter ore constituents from the denser ore constituents, screening the latter constituents by conveying the same over a plurality of screens of successively coarser mesh by a flow of liquid, respectively separating the ore portions passed through the screens from the liquid by settling and concentrating the latter portions by respectively subjecting the same to the effects of a plurality of substantially uniform flows of liquid, whereby the ore constituents of such portions will be separated and deposited in such flows of liquid in accordance with their densities, substantially as described.

6. The method of treating ore, which consists in washing the lighter ore constituents from the denser ore constituents, screening the latter constituents by conveying the same over a plurality of screens of successively coarser mesh by a flow of liquid, respectively separating the ore portions passed through the screens from the liquid by settling, concentrating the latter portions by respect-

Cancelled 5/10/18

ively subjecting the same to the effects of a plurality of substantially uniform flows of liquid, whereby the ore constituents of such portions will be separated and deposited in such flows of liquid in accordance with their densities, crushing the ore constituents, which fail to pass through any of the screens, to finer size, and then subjecting the latter constituents to the washing, screening, settling and concentrating steps hereinbefore described, substantially as described.

7. The method of treating ore, which consists in introducing ore into a flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid and the denser ore constituents will be deposited in the liquid, separating the suspended ore constituents from the liquid by dewatering and settling operations, separating the deposited ore constituents into a plurality of portions according to size by screening, and respectively subjecting the latter portions to the effect of a plurality of substantially uniform flows of liquid, whereby the ore constituents of different densities of such portions will be separated and deposited at different places, substantially as described.

8. The method of treating ore, which consists in introducing ore into a substantially uniform flow of liquid, whereby some of the ore constituents will be carried away on the surface of the liquid and some of the ore constituents will be deposited in the liquid, skimming the material on the surface of the liquid from the liquid, separating the deposited ore constituents into a plurality of portions according to size by screening, and separate-

ly concentrating the latter portions by respectively sub-  
jecting the same to the effects of a plurality of sub-  
stantially uniform <sup>and substantially horizontal 4/4/19</sup> flows of liquid, whereby ore constituents  
of different densities of each of such portions will be  
separated and deposited at different places, substantially  
as described.

9. In apparatus of the class described, a tank,  
means for producing a substantially uniform flow of liquid  
in said tank, means for introducing ore into such flow of  
liquid, whereby the lighter ore constituents will be  
washed away and held in suspension by the liquid and the  
denser ore constituents will be deposited in the tank,  
means for separating the suspended ore constituents -  
from the liquid, said last means comprising a tower and  
means for conveying liquid, with ore constituents suspended  
therein, from said tank and introducing the same into the  
tower, ~~a screening device comprising a plurality of screens~~  
of successively coarser mesh, means for conveying the de-  
posited ore constituents from the tank to the screening  
device, and means for respectively concentrating the por-  
tions of ore passed through the screens of the screening  
device, substantially as described.

10. In apparatus of the class described, a tank,  
means for producing a substantially uniform flow of liquid  
in said tank, means for introducing ore into such flow of  
liquid, whereby the lighter ore constituents will be  
washed away and held in suspension by the liquid and the  
denser ore constituents will be deposited in the tank,  
means for separating the suspended ore constituents from  
and slake  
A

the liquid, said last means comprising a tower and means for conveying liquid with ore constituents suspended therein, from said tank and introducing the same into the tower, <sup>adjacent the lower end thereof</sup> ~~a screening device comprising a plurality of screens of successively coarser mesh, means for conveying the deposited ore constituents from the tank to the screening device,~~ means for separately collecting the ore portions passed through said screens, and means for respectively concentrating such collected ore portions, said last means comprising a plurality of tanks, one for each of said ore portions, and means for producing a substantially uniform flow of liquid in each of said tanks, substantially as described.

R. 4.4.

11. In apparatus of the class described, a tank, means for producing a substantially uniform flow of liquid in said tank, means for introducing ore into such flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid and the denser ore constituents will be deposited in the tank, <sup>and 5/18</sup> means for separating the suspended ore constituents from the liquid, said last means comprising a plurality of towers and means for conveying liquid with ore constituents suspended therein, from the tank and introducing the same into said towers adjacent the lower ends thereof, ~~a screening device comprising a plurality of screens of successively coarser mesh, means for conveying the deposited ore constituents from the tank to the screening device,~~ and means for respectively concentrating the portions of ore passed through said screens, substantially as described.

R. 5.

12. In apparatus of the class described, a tank, means for producing a substantially uniform flow of liquid

in said tank, means for introducing ore into such flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid and the denser ore constituents will be deposited in the tank, means for separating the suspended ore constituents from the liquid, said last means comprising a plurality of towers and means for conveying liquid with ore constituents suspended therein from the tank and introducing the same into said towers adjacent the lower ends thereof, ~~a screening device comprising a plurality of screens of successively coarser mesh,~~ means for conveying the deposited ore constituents from the tank to the screening device, means for respectively concentrating the portions of ore passed through said screens, and means for conveying the overflow from said towers to said tank, substantially as described. 5/6/18

*Fig. 6.*  
13. In apparatus of the class described, a tank, means for producing a substantially uniform flow of liquid in said tank, means for introducing ore into said flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid and the denser ore constituents will be deposited in the tank, <sup>and 5/6/18</sup> means for separating the suspended ore constituents from the liquid, said last means comprising a dewatering tower, means for conveying liquid with ore constituents suspended therein, from said tank and introducing the same into said tower adjacent the lower end thereof, a plurality of settling towers containing columns of liquid of different height, and a plurality of devices for conveying the material from said dewatering tower at a plurality of points of different height therein, into the tops of the columns of liquid in said settling towers respectively, ~~a screening device~~ 5/6/18

comprising a plurality of screens of successively coarser mesh, means for conveying the deposited ore constituents from said tank to the screening device, and means for respectively concentrating the ore portions passed through ~~and screens~~ substantially as described. 5/10/18

14. In apparatus of the class described, a tank, means for producing a substantially uniform flow of liquid in said tank, means for introducing ore into said flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by said liquid and the denser ore constituents will be deposited in the tank, <sup>and said</sup> means for separating the suspended ore constituents from the liquid, said last means comprising a dewatering tower, means for conveying liquid with ore constituents suspended therein from said tank and introducing the same into said tower adjacent the lower end thereof, a plurality of settling towers containing columns of liquid of different height, and a plurality of devices for conveying the material from said dewatering tower, at a plurality of points of different height therein, into the tops of the columns of liquid in said settling towers respectively, the heights of said columns of liquid varying inversely in proportion to the heights of the respective points in said dewatering tower from which the material is conveyed, ~~a screening device~~ comprising a plurality of screens of successively coarser mesh, means for conveying the deposited ore constituents from said tank to the screening device, and means for respectively concentrating the ore portions passed through ~~said screens~~ substantially as described. 5/10/18

15. The method of treating ore, which consists in introducing ore into a substantially uniform flow of liquid. ~~Cancelled 4/17/17~~

whereby the lighter ore constituents will be washed away and held in suspension by the liquid and the denser ore constituents will be deposited in the flow of liquid, and then separating the suspended ore constituents from the liquid substantially as described.

12. *Re-written as Claim 9 - Patent B-5*  
16. The method of treating ore, which consists in *he directly transverse to such flow 4/27/17* introducing ore into a flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid, and retarding the effect of gravity on the *immediately upon its introduction herein 4/27/17* ore introduced into the flow of liquid, whereby the length of time the ore will be subjected to the washing *and transverse effect 4/27/17* effect of the flow of liquid will be increased, substantially as described.

13. *9*  
17. The method of treating ore, which consists in *he directly transverse to such flow 4/27/17* introducing ore into a flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid, retarding the effect of gravity on the *immediately upon its introduction herein 4/27/17* ore introduced into the flow of liquid, whereby the length of time the ore will be subjected to the washing *and transverse effect 4/27/17* effect of the flow of liquid will be increased, and separating the suspended ore constituents from the liquid substantially as described.

*10. 4/27/17*  
18. The method of treating ore, which consists in maintaining a substantially uniform flow of liquid in an endless path, introducing ore into such flow of liquid, *the denser ore constituents will be deposited in the flow and 4/27/17* whereby the lighter ore constituents will be washed away and held in suspension in the flow of liquid as slimes, maintaining the volume of such flow of liquid substantially constant *and continuously retarding directly from such flow constant, and separating a relatively small portion of the 4/27/17*



a relatively small but definite and predetermined proportion liquid from such flow at a place beyond the place of introduction of the ore, whereby the flow of liquid will become rich in slimes, substantially as described.

11. The method of treating ore, which consists in maintaining a substantially uniform flow of liquid in an endless path, introducing ore into such flow of liquid, whereby the heavier ore constituents will be deposited in the flow and the lighter ore constituents will be washed away and held in suspension in the flow of liquid as slimes, retarding the effect of gravity on the ore introduced into the flow of liquid, whereby the length of time the ore will be subjected to the washing effect of the flow of liquid will be increased, maintaining the volume of such flow of liquid substantially constant, and separating a relatively small portion of the liquid from such flow at a place beyond the place of introduction of the ore, whereby the flow of liquid will become rich in slimes, substantially as described.

12. The method of treating ore, which consists in maintaining a substantially uniform flow of liquid in an endless path, introducing ore into such flow of liquid, whereby the heavier ore constituents will be deposited in the flow and the lighter ore constituents will be washed away and held in suspension in the flow of liquid as slimes, maintaining the volume of such flow of liquid substantially constant, separating a relatively small portion of the liquid from such flow at a place beyond the place of introduction of the ore, whereby the flow of liquid will become rich in slimes, and separating the suspended ore material from such separated portion of liquid, substantially as described.

13. The method of treating ore, which consists in maintaining a substantially uniform flow of liquid in an

enlosed path, introducing ore into such flow of liquid, <sup>5/6/18</sup>  
~~the denser ore constituents will be deposited in the flow and~~  
whereby the lighter ore constituents will be washed away  
and held in suspension in the flow of liquid as slimes,  
retarding the effect of gravity on the ore introduced into  
the flow of liquid, whereby the length of time the ore will  
be subjected to the washing effect of the flow of liquid  
will be increased, maintaining the volume of such flow of  
liquid substantially constant, <sup>continuously withdrawing directly</sup>  
from such flow a relatively small but definite and pre-  
determined portion of the liquid <sup>from which flow at a place beyond where the</sup>  
~~portion of the liquid from which flow at a place beyond where the~~  
~~denser ore constituents are deposited. Slimes~~  
liquid will become rich in slimes, and separating the sus-  
pended ore material from such separated portion of liquid,  
substantially as described.

<sup>Cancelled 4/27/17</sup>  
22. The method of treating ore, which consists in  
introducing ore into a substantially uniform flow of  
liquid, whereby a portion of the ore constituents will be  
deposited in the liquid and another portion of the ore  
constituents will be carried on the surface of the liquid,  
and skimming the latter ore constituents from the surface  
of the liquid, substantially as described.

<sup>Cancelled</sup>  
23. The method of treating ore, which consists in  
introducing ore into a substantially uniform flow of  
liquid, whereby a portion of the ore constituents will be  
deposited in the liquid, a portion will be carried on  
the surface of the liquid, and another portion will be held  
in suspension in the liquid, skimming the ore constituents  
carried on the surface of the liquid from the liquid, and  
separating the suspended ore constituents from the liquid,  
substantially as described.

<sup>Cancelled 5/6/18</sup>  
24. In apparatus of the class described, a substan-  
tially horizontal, elongated tank, means for producing a

substantially uniform flow of liquid in said tank, means for introducing ore into said flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid, and means for retarding the descent of the ore in said liquid, substantially as described.

25. In apparatus of the class described, a substantially horizontal, elongated tank, means for producing a substantially uniform flow of liquid in said tank, means for introducing ore into said flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid, and means comprising a plurality of baffles arranged in the tank below the point of introduction of the ore, for retarding the descent of the ore in the liquid, adjacent baffles being inclined in opposite directions, substantially as described.

20.

26. In apparatus of the class described, a tank,

means for producing a substantially uniform flow of liquid in said tank, and means for introducing ore into such flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid, said tank comprising means for separating a portion of the liquid from said flow of liquid at a place beyond the place of introduction of the ore, substantially as described.

15.

27. In apparatus of the class described, a substantially horizontal, elongated tank, means dividing said tank into two portions and adjustably controlling communication between such portions, means for producing a substantially uniform flow of liquid in one of said tank portions, and means for introducing ore into the flow of liquid at a portion of said tank.

place remote from the other of said tank portions, substantially as described.

~~16.~~  
29. In apparatus of the class described, a substantially horizontal, elongated tank, a perforated partition dividing said tank into two portions, means for producing ~~a substantially uniform flow of liquid in one of said tank portions, means for introducing ore into the flow of liquid~~ at a place remote from the other of said tank portions, and adjustable means for controlling the extent of the openings afforded by the perforations in said partition, substantially as described.

~~17.~~  
30. In apparatus of the class described, a substantially horizontal, elongated tank, a partition extending lengthwise of said tank and with its ends spaced from the ends of the tank, means for producing a substantially uniform flow of liquid in said tank in an endless path around said partition, means for introducing ore into such flow of liquid adjacent one end of said partition, a perforated partition between the other end of said first partition and the adjacent end of the tank, adjustable means for controlling the extent of the openings afforded by the perforations in said perforated partition, and means for conveying the material from the portion of the tank between said last named partition and the adjacent end of the tank, substantially as described.

~~18.~~ *Cancelled 5/6/19*  
31. In apparatus of the class described, ~~a pair of~~ *non communicating tanks* substantially horizontal, elongated tanks, means for producing a substantially uniform flow of liquid in ~~each of~~ *each of* said tanks, means for introducing ore into ~~each of~~ *each of* said flows of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid in

each tank and the denser ore constituents will be deposited in the tanks, and means for feeding liquid with ore constituents suspended therein and deposited ore constituents from one of said tanks into the flow of liquid in the other of said tanks, said last named tank comprising means for separating liquid, having ore constituents suspended there-  
*at a point beyond that where the denser ore constituents are deposited*  
in, from the flow of liquid therein, substantially as *11/17*  
described.

*10 12.*  
31. In apparatus of the class described, ~~a pair of~~ *substantially* horizontal, elongated tank, means for producing a substantially uniform flow of liquid in ~~each of said~~ *5/6/18*  
*10* tank, means for introducing ore into ~~each of~~ such flow of liquid, whereby the lighter ore constituents will be washed away and held in suspension by the liquid in ~~each~~ *said* tank and the denser ore constituents will be separated and deposited in accordance with their densities in the tank. *5/6/18*  
~~means for feeding deposited ore constituents and liquid,~~  
with ore constituents suspended therein, from one of said *5/6/18*  
~~tanks into the other of said tanks, said last tank com-~~ *5/6/18*  
prising means for separating liquid, having ore constituents *at a point beyond that where the denser ore constituents are deposited*  
suspended therein, from the flow of liquid therein, and means for separately collecting and removing ore constituents of different densities deposited in said last tank, sub- *5/6/18*  
stantially as described.

*12/11*  
*26 19.*  
32. The method of treating liquid containing ore constituents in suspension, which consists in slowly feeding said liquid upwardly against the action of gravity to form a column of liquid, whereby the ore constituents will settle in the liquid more ~~or less~~ *or* *3/11/15* according to their densities, substantially as described.

*7, 15, 17, 20, 23*  
*23,*

<sup>20.</sup>  
~~38.~~ The method of treating liquid containing ore constituents in suspension, which consists in slowly feeding said liquid upwardly against the action of gravity to form a column of liquid, whereby the ore constituents will settle in the liquid more or less according to their densities, and separately collecting portions of liquid with ore constituents of different densities from such column at points of different height, substantially as described.

*Refined*

<sup>21.</sup>  
~~39.~~ The method of treating liquid containing ore constituents in suspension, which consists in slowly feeding said liquid upwardly against the action of gravity to form a column of liquid, whereby the ore constituents will settle in the liquid more or less according to their densities, separately collecting portions of liquid with ore constituents of different densities from such column at points of different height, and respectively introducing such collected portions of liquid and ore constituents into the tops of columns of liquid of different height, whereby the ore constituents will settle in all such columns of liquid in substantially equal intervals of time, substantially as described.

*Refined*

<sup>22.</sup>  
~~40.~~ The method of treating liquid containing ore constituents in suspension, which consists in slowly feeding said liquid upwardly against the action of gravity to form a column of liquid, whereby the ore constituents will settle in the liquid more or less according to their densities, separately collecting portions of liquid with ore constituents of different densities from such column at points of different height, respectively introducing such collected portions of liquid and ore constituents into the tops of columns of liquid of differ-

*Refined*

ent height, whereby the ore constituents will settle in all such columns of liquid in substantially equal intervals of time, and respectively removing the settlements from such columns of liquid and concentrating the same, substantially as described.

*23.*

*23.* The method of treating liquid containing ore constituents in suspension, which consists in slowly feeding said liquid upwardly against the action of gravity to form a column of liquid, whereby the ore constituents will settle in the liquid more or less according to their densities, removing the settlements from such column of liquid, and then concentrating the same, substantially as described.

*24.*

*24.* The method of treating liquid containing ore constituents in suspension, which consists in slowly feeding said liquid upwardly against the action of gravity to form a column of liquid, whereby the ore constituents will settle in the liquid more or less according to their densities, and separately removing settlements of substantially different densities from such column of liquid and concentrating the same, substantially as described.

*cancelled 3/7/16*  
*take out the 32-47*  
38. In apparatus of the class described, a tower, means for feeding liquid containing ore constituents in suspension into the tower adjacent the lower end thereof, a second tower containing a column of liquid, and means for conveying the material from said first tower, at a point below the top thereof and discharging the same into the top of the column of liquid in the second tower, substantially as described.

*Cancelled 3/7/16*

39. In apparatus of the class described, a tower, means for feeding liquid containing ore constituents in suspension into the tower adjacent the lower end thereof, a second tower containing a column of liquid, and means for conveying the material from said first tower, at a point adjacent the lower end thereof and discharging the same into the top of the column of liquid in the second tower, substantially as described.

40. In apparatus of the class described, a tower, means for feeding liquid containing ore constituents in suspension into the tower adjacent the lower end thereof, a second tower containing a column of liquid, means for conveying the material from said first tower, at a point below the top thereof, and discharging the same into the second tower above the top of the column of liquid therein, a valve in said second tower intermediate the top of said column of liquid and the point at which the material conveyed from the first tower is discharged, a valve in said conveying means, and means for opening and closing one of said valves and for simultaneously closing and opening the other of said valves, substantially as described.

41. In apparatus of the class described, a tower, means for feeding liquid containing ore constituents in suspension into the tower adjacent the lower end thereof, a plurality of settling towers containing columns of liquid of different height, and a plurality of devices for respectively conveying the material from said first tower at points of different height therein, and discharging the same into the tops of said columns of liquid in the settling towers, substantially as described.



*Cancelled 3/17/10*

42. In apparatus of the class described, a tower, means for feeding liquid containing ore constituents in suspension into the tower adjacent the lower end thereof, a second tower containing a column of liquid, means for conveying the material from said first tower, at a point below the top thereof and discharging the same into the column of liquid in the second tower, and means for returning the overflow from said first tower to said feeding means, substantially as described.

43. In apparatus of the class described, a tower, means for feeding liquid containing ore constituents in suspension into the tower adjacent the lower end thereof, a second tower containing a column of liquid, means for conveying the material from said first tower, at a point below the top thereof, and discharging the same into the second tower above the column of liquid therein, and means for opening and closing the second named tower above the column of liquid therein and for simultaneously closing and opening said conveying means, substantially as described.

44. In apparatus of the class described, a tank containing liquid having ore constituents in suspension, a tower, means for feeding said liquid from said tank into said tower adjacent the lower end thereof, and means for feeding the overflow from said tower back into said tank, substantially as described.

45. In apparatus of the class described, a dewatering tower, means for feeding liquid containing ore constituents in suspension into said tower adjacent the lower end thereof, a pair of settling towers containing columns of liquid of different heights, means for conveying the material from said first tower at a point intermediate the

*Cancelled 3/17/16*

ends thereof and discharging the same into the settling tower having the column of liquid of lesser height and above said column, and means for conveying the material from said first tower at a point below said first point and discharging the same into the other settling tower above the column of liquid therein, substantially as described.

46. In apparatus of the class described, a dewatering tower, means for feeding liquid containing ore constituents in suspension into said tower adjacent the lower end thereof, a pair of settling towers containing columns of liquid of different heights, means for conveying the material from said first tower at a point intermediate the ends thereof and discharging the same into the settling tower having the column of liquid of lesser height and above said column, means for conveying the material from said first tower at a point below said first point and discharging the same into the other settling tower above the column of liquid therein, and means for opening and closing each of said settling towers, above the column of liquid therein, and for simultaneously closing and opening the respective conveying means, substantially as described.

47. In apparatus of the class described, a dewatering tower, means for feeding liquid containing ore constituents in suspension into said tower adjacent the lower end thereof, a plurality of settling towers containing columns of liquid of different height, a plurality of devices for respectively conveying the material from said dewatering tower at a plurality of points of different height and discharging the same into the settling towers

*Cancelled 3/11/16*

above the columns of liquid therein, the heights of the points in the dewatering tower from which the material is conveyed varying inversely in proportion to the heights of the columns of liquid in the respective settling towers, substantially as described.

*Amended 12/14/15*

48. In apparatus of the class described, a device adapted to feed ore to a screen in a substantially uniform sheet, said device comprising a substantially flat feeding member having a plurality of spaced blocks adjustably mounted on its upper surface and adjacent ore end thereof, substantially as described.

*Amended 12/14/15*

49. In apparatus of the class described, a device for feeding ore to a screen in a substantially uniform sheet, said device comprising an inclined substantially flat feeding member having a plurality of spaced blocks pivotally mounted on its upper surface and adjacent the lower end thereof, the pivotal mountings of the blocks being adapted to frictionally hold the blocks in any adjusted position, substantially as described.

*Amended 12/14/15*

50. In apparatus of the class described, a device for feeding ore to a screen in a substantially uniform sheet, said device comprising an inclined substantially flat feeding member having a plurality of spaced triangular shaped blocks adjustably mounted on its upper surface and adjacent its lower end, substantially as described.

*Amended 12/14/15*

51. In apparatus of the class described, a device for feeding ore to a screen in a substantially uniform sheet, said device comprising an inclined, substantially flat feeding member having a series or rows of spaced blocks adjustably mounted on its upper surface and adjacent

*Cancelled 3/7/16*

its lower end, the blocks in adjacent rows being arranged in staggered relation, substantially as described.

52. In apparatus of the class described, a device for feeding ore to a screen in a substantially uniform sheet, said device comprising an inclined, substantially flat feeding member provided with a series of rows of blocks pivotally mounted on its upper surface and adjacent its lower end, the blocks in adjacent rows being arranged in staggered relation and the pivotal mountings of the blocks being adapted to frictionally hold the blocks in any adjusted position, substantially as described.

53. In apparatus of the class described, a device for feeding ore to a screen in a substantially uniform sheet, said means comprising an inclined, substantially flat feeding member flaring toward its lower end, and a plurality of rows of blocks mounted on the upper surface of said feeding member and adjacent its lower end, the blocks in adjacent rows being arranged in staggered relation, substantially as described.

54. In apparatus of the class described, an inclined screen, and means for discharging material onto the screen at the upper end thereof in a substantially uniform sheet across the width of the screen, said means comprising an upstanding member extending across the screen at its upper end and provided with a plurality of adjustable gates, substantially as described.

55. In apparatus of the class described, an inclined screen, and a trough extending transversely of the screen at the upper end thereof, one wall of said trough being provided with a plurality of substantially vertically adjustable gates for controlling communication between

*Cancelled 3/7/16*  
the trough and the upper end of the screen, substantially as described.

56. In apparatus of the class described, an inclined screen, and means for feeding ore to the upper end of said screen, said means comprising a trough at the upper end of the screen, one wall of said trough being provided with adjustable means for controlling communication between the trough and screen, and a substantially flat distributing member adapted to discharge ore into said trough, said distributing member being provided with a plurality of spaced, upstanding blocks adjustably mounted on the upper surface thereof, substantially as described.

57. In apparatus of the class described, an inclined screen, and means for feeding ore to the upper end of said screen, said means comprising a trough at the upper end of the screen, and a substantially flat inclined distributing member, the lower end of said member being adapted to discharge the ore into said trough, said distributing member being provided with a plurality of spaced upstanding blocks adjustably mounted on the upper surface thereof and adjacent its lower end, and one wall of said trough being provided with a plurality of vertically adjustable gates for controlling communication between the trough and the screen, substantially as described.

58. In apparatus of the class described, a plurality of screens over which the material to be screened is adapted to be successively fed, a plurality of settling tanks adapted to respectively receive the material passed through the screens, means for conveying material passed through the screens to the respective settling tanks, and means for respectively conveying the overflows therefrom.

*Cancelled 3/1/46*  
from the settling tanks to the succeeding screens, substantially as described.

59. In apparatus of the class described, a plurality of screens over which the material to be screened is adapted to be successively fed, a plurality of settling tanks adapted to respectively receive the material passed through the screens, means for conveying material passed through the screens to the respective settling tanks, means for adjustably controlling the flow of material through said conveying means, and means for respectively conveying the overflows from the settling tanks to the succeeding screens, substantially as described.

60. In apparatus of the class described, a plurality of inclined screens of successively coarser mesh over which the material to be screened is adapted to be successively fed, a plurality of settling tanks, means for respectively conveying the material passed through the screens to the settling tanks, and means for respectively conveying the overflows from the settling tanks to the upper ends of the succeeding screens, substantially as described.

61. In apparatus of the class described, a plurality of screens over which the material to be screened is adapted to be successively fed, a plurality of settling tanks adapted to respectively receive the material passed through the screens, means for conveying material passed through the screens to the respective settling tanks, means for respectively conveying the overflows from the settling tanks to the succeeding screens, and means for conveying the overflow from the last settling tank to the first screen, substantially as described.

*Original*  
*Cancelled 4/11/46*  
62. In apparatus of the class described, a plurality of screens over which the material to be screened is adapted to be successively fed, a plurality of settling tanks adapted to respectively receive the material passed through the screens, means for conveying the material passed through the screens to the respective settling tanks, means for respectively conveying the overflows from the settling tanks to the succeeding screens, (a settling chamber, means for conveying the material passed over the last of said screens into said chamber, (means for conveying liquid from said chamber to the first of said screens), crushing means, means for conveying the settlings in said chamber to said crushing means, and means for conveying material crushed by said crushing means to the first of said screens, substantially as described.

*Original*  
63. In apparatus of the class described, a plurality of screens over which the material to be screened is adapted to be successively fed, a plurality of settling tanks adapted to respectively receive the material passed through the screens, means for conveying the material passed through the screens to the respective settling tanks, means for respectively conveying the overflows from the settling tanks to the succeeding screens, a settling chamber, means for conveying the overflow from the last of said settling tanks to the settling chamber, means for conveying the material passed over the last of said screens into said chamber, means for conveying liquid from said chamber to the first of said screens, crushing means, means for conveying the settlings in said chamber to said crushing means, and means for conveying material crushed by said crushing means to the first of said screens, substantially as described.

*Cancelled 3/11/10* 50 d 10  
64. In apparatus for treating ore, a series of elongated and substantially horizontal tanks, means for producing uniform flows of liquid in each of said tanks, and means for respectively introducing ore constituents of varying sizes into the flows of liquid in the tanks, the depths and rates of flow of the liquid in the respective tanks being such that the ore constituents respectively introduced in the different flows of liquid will be separated and deposited in all the tanks in substantially equal intervals of time, substantially as described.

65. In apparatus for treating ore, a plurality of elongated and substantially horizontal, endless tanks, said tanks being arranged adjacent to each other and so that each tank except one surrounds an adjacent tank, said tanks being of successively increasing depths, and means for producing a substantially uniform flow of liquid in each of said tanks, substantially as described.

66. In apparatus for treating ore, a plurality of elongated and substantially horizontal endless tanks, said tanks being arranged adjacent to each other and so that each tank except one surrounds an adjacent tank, said tanks being of successively increasing depths, means for producing a substantially uniform flow of liquid in each of said tanks, and means for introducing ore constituents of successively greater size into said tanks respectively, the ore constituents of least size being introduced into the tank of least depth, substantially as described.

67. In apparatus for treating ores, a series of adjacent substantially horizontal tank portions, the bottoms of said tank portions being located in a single plane in-



*Cancelled 3/17/11*

clined to the horizontal, and means for producing a substantially uniform flow of liquid in each of said tank portions, substantially as described.

68. In apparatus for treating ore, a series of adjacent substantially horizontal tank portions, the bottoms of said tank portions being located in a single plane inclined to the horizontal, whereby the tank portions will be of successively increasing depths, means for producing a substantially uniform flow of liquid in each of said tank portions, and means for introducing ore constituents of successively increasing size into the tank portions respectively, the ore constituents of least size being introduced into the tank portion of least depth, substantially as described.

69. In apparatus for treating ores, an elongated, substantially horizontal tank, means for producing a substantially uniform flow of liquid in said tank, and means, comprising a hopper having an adjustable gate and a feed roller co-operating with said gate and extending partially within said hopper, for introducing ore in a substantially uniform sheet into said flow of liquid, substantially as described.

70. In apparatus for treating ore, means for feeding ore in a substantially uniform sheet into a flow of liquid, said means comprising a hopper, a feed roller located partially within said hopper, the hopper being provided with a gate above the roller and adjustable towards and away from the roller for controlling the amount of material removed from the hopper by the roller, and a fluted distributor board for directing the material discharged by the roller into the liquid, substantially as described.

25.

~~30.~~

72.

The method of treating ore, which consists in producing a plurality of substantially uniform flows of liquid of successively greater depths, and introducing ore constituents of successively greater sizes into such flows of liquid respectively, the ore constituents of smallest size being introduced into the flow of liquid of least depth, whereby all the ore constituents will be separated and deposited in the different flows of liquid in substantially equal intervals of time, substantially as described.

Exhibit A' - Claims 33 or 34 - 4/27/17  
Exhibit B - Claims 8 and 9 - 5/6/18

See  
also  
A. S.  
1/1

This specification signed and witnessed this 28<sup>th</sup> day of January 1914

Thos. A. Edison

Witnesseth:

1. William A. Hardy
2. Harry J. Laidlaw

## Oath.

State of New Jersey } ss.,  
County of Essex

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in METHODS AND MEANS FOR TREATING ORBS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

Sworn to and subscribed before me this 28<sup>th</sup> day of January 1914

[Seal]

Thos. A. Edison  
Harry J. Laidlaw  
Notary Public,  
ROTARY PUBLIC, STATE OF NEW JERSEY,  
COMMISSION EXPIRES SEPT. 6, 1917

Fig. 1.

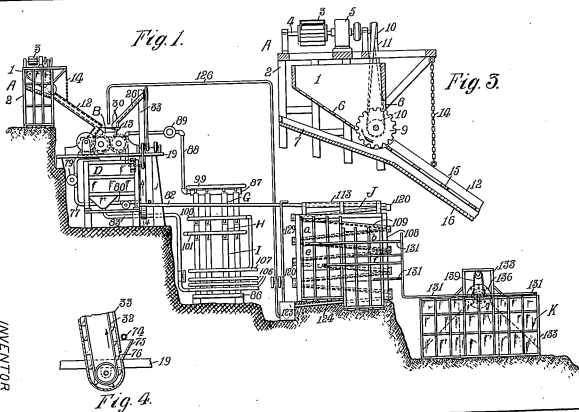


Fig. 3.

Fig. 4.

WITNESSES

*J. B. Brown*  
*J. B. Brown*

INVENTOR

BY *James R. Brown*  
ATTORNEYS

NO. 138 8-3-88

1141.000

Serial No. 27776 Dec. 23, 1903

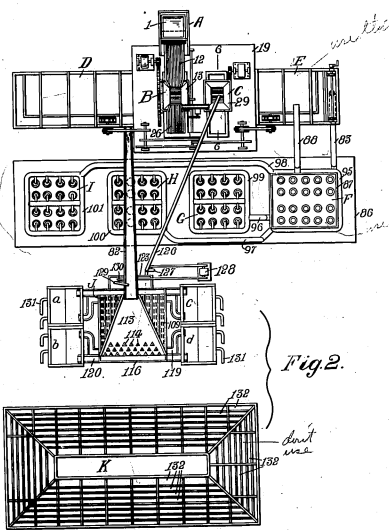


Fig. 2.

WITNESSES

*C. C. Brown*  
*J. B. Ballentine*

INVENTOR

*Thomas A. Edison*

BY

*Ryan & Hecan*  
ATTORNEYS

Fig. 24.

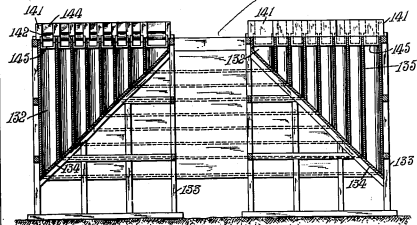


Fig. 5.

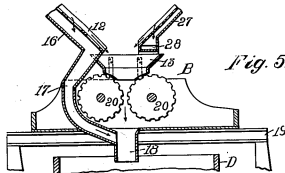
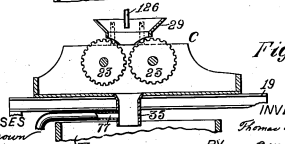


Fig. 6.



WITNESSES  
 C. Brown  
 William A. Hardy

INVENTOR  
 Thomas A. Edison  
 BY  
 Roper & Holden  
 his ATTORNEYS

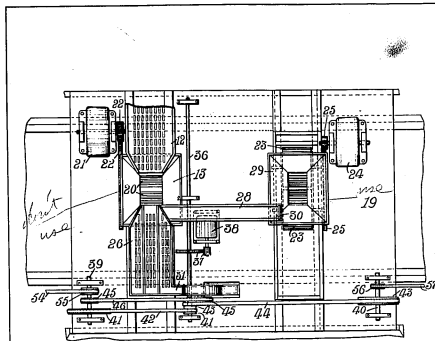


Fig. 7.

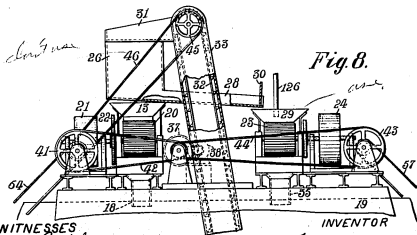


Fig. 8.

WITNESSES  
 J. A. Murphy  
 William A. Hardy.

INVENTOR  
 Thomas A. Edison  
 BY Edgar & Holden  
 Attorneys

Fig. 10.

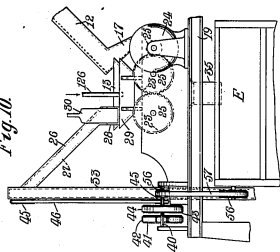
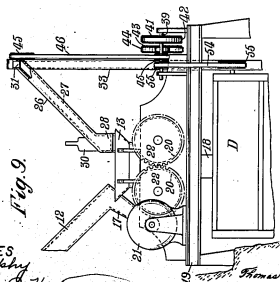


Fig. 9.



WITNESSES

J. A. Murphy

William C. Hardy

INVENTOR

BY

Thomas A. Edison

By his ATTORNEYS



Shocio-Sih-ah 6

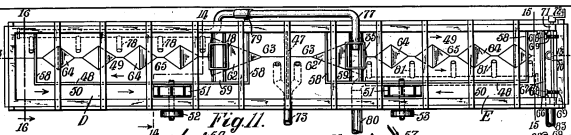
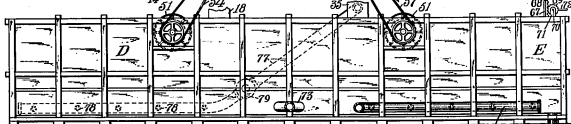
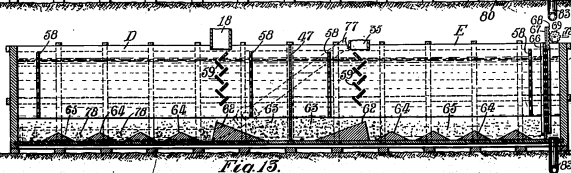


Fig. 11.



*Fig. 12.*



*Fig. 13.*

WITNESSES

A.B. Brown  
J.D. Dunning

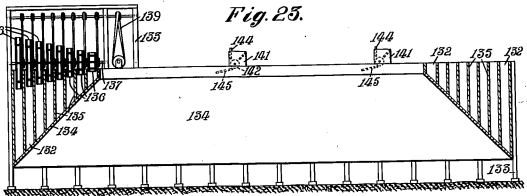
INVENTOR

BY  
Thomas A. Edison  
Esq. & Associates  
his ATTORNEYS

was the  
a 1/2 point

WITNESSES  
J. A. Hoppley  
William C. Cheney

Fig. 25.



last one

INVENTOR  
Thomas H. Burton  
BY Robert W. Johnston  
ATTORNEYS

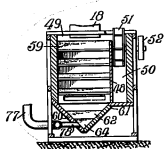


Fig. 14.

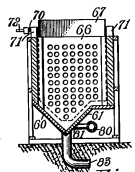


Fig. 15.

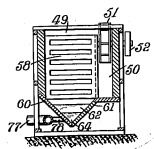


Fig. 16.

use

SERIAL NO. 2 11710  
JAN 10 1906  
SHAW-WALKER

WITNESSES  
*J. A. H. H. H.*  
*William A. H. H.*

INVENTOR  
*James H. H.*  
 BY *James H. H.*  
 ATTORNEYS

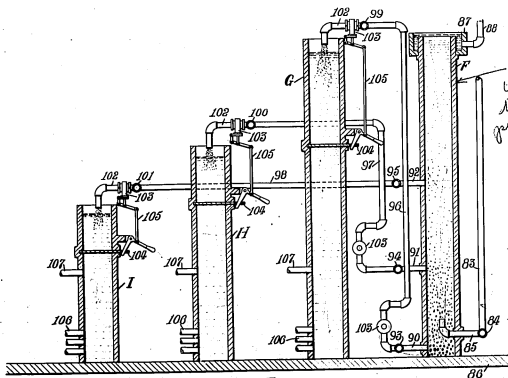


Fig. 17

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51/9/16 25-  
11 7

*don't  
use - but good*

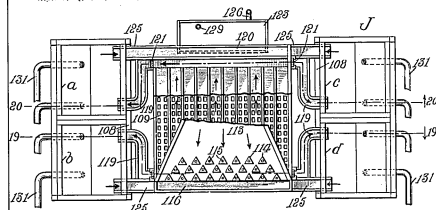
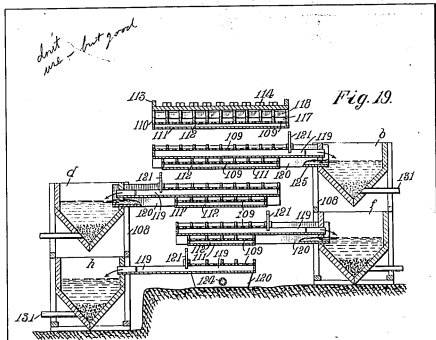
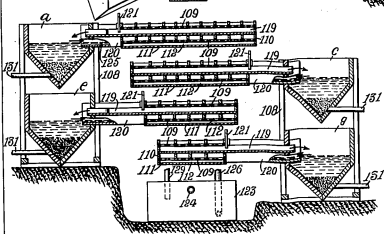
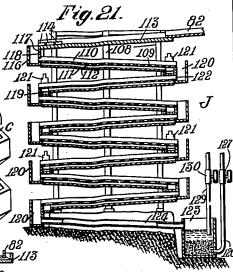
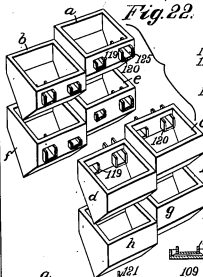


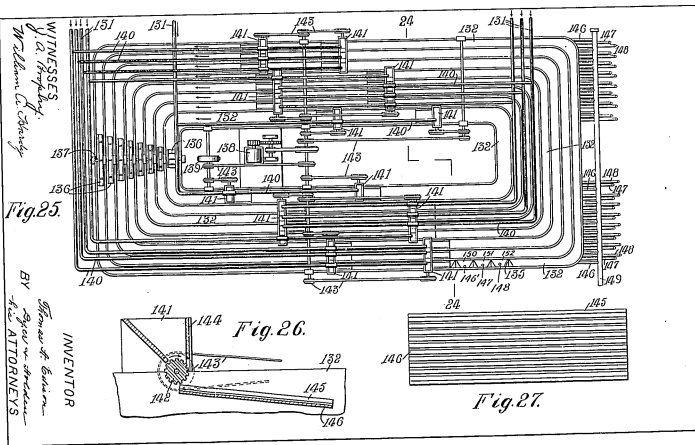
Fig. 18.

WITNESSES  
J. A. Bropsey  
William A. Hardy

INVENTOR  
Thomas A. Edison  
BY R. M. & H. L. H. ATTORNEYS

*and was not good*





Div. 25 Room 315  
*Address only*  
"The Commissioner of Patents,  
Washington, D. C.,"  
and set any official by name.

2-260

FFD/TFM

Paper No. 2  
All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

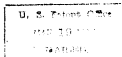
DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

March 19, 1914.

Dyer & Holden,

Edison Office Bldg.,

Orange, New Jersey.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Ser. No. 817,976, filed Feb. 11, 1914, for

Method and Means for Treating Ores.

*Thomas Ewing*  
Commissioner of Patents.

6-201

The reference to co-pending application 699,109, should indicate in a general way what is described and claimed in said application that is described but not claimed in this application. A reference merely for further information or for the purpose of supplementing the disclosure in this application is not proper. The reference to the application of another applicant in lines 3 to 5, page 8, is for the purpose of further information and as such is not permissible. Further, it does not appear that the reference thereto is authorized.

It is suggested that section lines 19--19 and 20--20 be more definitely indicated in Fig. 19, in which the numerals 19 and 20 have the appearance of being applied to elements of the structure. Dotted lines should replace what have the appearance of lead lines in said figures. In line 18, page 12, "17" should be "18". It is thought that 84 should be applied in Fig. 1. The references in lines 18, 19, page 24, and lines 16, 17, 22, page 25, to another application are for further information and as such are not permissible. All necessary information must be supplied in this application. (The pockets (line 18, page 25) should be shown. Pipes 146 and 149 are shown as above pipes 147 and 148, and explanation is requested as to how concentrates reach pipes 146 and

Ser. No. 817,976---2.

149. In line 26, page 26, "is" should be "are". The reference to the Clifford application in lines 18, 19, page 27, is objected to. The apparatus referred to must be disclosed in this application if reference thereto be retained.

Claim 1 to 14 inclusive, are for the assemblage of separators or the series of steps performed thereby, classifiable in 83-59. *definite*

Claims 15 to 17 inclusive, 24, 25, 27, 30 and 31 are generic to the separators D and E, classifiable in Class 83-82. *definite*

Claims 18 to 23 inclusive, 26, 28 and 29 are specific to the separator E or the process thereof, classifiable in 83-82. *definite*

Claims 32 to 47 are for the separator H, I, classifiable in 83-82. *definite*

Claims 48 to 53 are for a feeder per se classifiable in 83-82. *definite*

Feed Regulators.

Claims 54 to 61 inclusive, are for a screening combination (separator J) classifiable in 83-56. *definite*

Claims 62 and 63 are for a combination of a screening and crushing means classifiable in either 83-82 or 83-12. (It may be noted, however, that these claims appear to be plainly for aggregations). *definite*

Claims 64 to 71 inclusive, are for the separator K, classifiable in 83-82. *definite*

Only one of the three separators classifiable in 83-82 may be claimed in this application; the feed regulator is an independent invention claimable by itself in one application and may not be joined with the other inventions; and the screen combination is also an independent invention which should be claimed separately from the other inventions.

Applicant is required to restrict the claims in this application to one of the inventions indicated in advance of other action



Ser. No. 817,976---3.

upon the merits.

It is possible that claims 1 to 31 inclusive, could be prosecuted in the same application.

For partial view of the prior art see Bilharz, Feb. 18, 1892, 469,037, 83-59; Morley, Apr. 19, 1864, 42,392; Shedlock, Apr. 14, 1896, 556,213; Allen, June 24, 1904, 762,870; McKeone, Sept. 3, 1907, 866,053; Langerfeld, Dec. 17, 1907, 873,951; McCarty, Jan. 14, 1913, 1,080,483, 83-82; Parker et al., Jan. 26, 1892, 467,569, 83-89; Stanley, Dec. 26, 1905, 808,488, 83-12 D; Collopy, Jan. 6, 1874, 146,168; Stutz, Aug. 23, 1881, 246,046, 83-56 B; Barlow, Massicks, Aug. 4, 1896, 565,151, 83-56 A, and Duret, Mar. 22, 1910, 952,562, 83-44 B.

The above citations are the result of a merely cursory search.  
See ex parte Ramsey, 146 O.G. 721.

examiner, Div. 25.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

METHODS AND MEANS FOR  
TREATING ONES

Photolithographic Division

Filed February 11, 1914

Serial No. 817,976

HONORABLE COMMISSIONER OF PATENTS,

S I R :

Kindly send us one print of each of the sheets of drawings in the above entitled case containing Figures 1, 18 and 25 respectively when the same have been changed in accordance with directions given to the Draftsman on even date herewith. Charge the cost thereof to the account of Thomas A. Edison, Incorporated.

Respectfully,

THOMAS A. EDISON

By Dyer and Holden  
His Attorneys

Orange, New Jersey

March 16, 1915

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

METHODS AND MEANS FOR  
TREATING ORES

Filed February 11, 1914

Serial No: 817,976

Drafting Division

HONORABLE COMMISSIONER OF PATENTS,

S I R :

The Official Draftsman is hereby authorized and requested to change the drawings in the above entitled case as indicated in red ink on the accompanying prints. These changes are as follows:-

Figure 1: Applying reference characters 106 and 107 to the horizontal pipes adjacent the lower end of towers I.

Figure 18: Indicating section lines 19--19 and 20--20 more clearly.

Figure 25: Changing 146 to 146'. Showing a set of pockets 150, 151 and 152 in one of the tanks 132 and the connections of pipes 146', 147 and 148 with these pockets.

Charge the cost of these changes to the account of Thomas A. Edison, Incorporated.

Respectfully,

THOMAS A. EDISON

By Dyer and Holden  
His Attorneys

Orange, New Jersey

March 16, 1915

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

METHODS AND MEANS FOR TREATING ORES

Room No. 315.

Filed February 11, 1914

Serial No. 817,976

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of March 19, 1914, please amend the above entitled case as follows:-

Page 2, lines 21, 22 and 23, cancel "in a manner similar to that described in my copending application Serial No. 699,109, filed May 23, 1912 and entitled Method and Means for Concentrating Ores."

Page 4, line 27, before "liquid" insert - the - .

Cancel the first sentence on page 8 and substitute therefor the following: - This step of my method may be carried out in any suitable manner and by any suitable apparatus. - .

Page 12, line 18, cancel "chute 17" and insert - Spout 18 - .

Page 24, line 18, after "manner" insert - herein - before - . Lines 18 and 19, cancel "in my application above referred to".

Page 25, lines 16 and 17, cancel "is the same as described in my application referred to above, and the" and insert in place thereof - and gravity separates the ore constituents into - . Line 18, after "tailings" insert

- which - . Same line, cancel "(not shown)" and insert in place thereof - such as shown at 150, 151 and 152 in Figure 23 - . Lines 19 and 20, cancel "as described in said application". Lines 22 and 23, cancel "in the manner set forth in my application referred to" and insert in place thereof - for further separation in any desired manner - . Line 24, cancel "by" and insert - through - . Same line, change "146" to - 146' - . Line 26, after "respectively" insert - either under the action of gravity or by suitable pumps (not shown) - . Line 30, change "146" to - 146' - .

Page 26, line 26, cancel "is" and insert - are - .  
Page 27, cancel lines 18 and 19 and insert in place thereof - employ any suitable skimming apparatus. The liquid - . Lines 21, 22 and 23, cancel "and such operation may be performed by any other suitable apparatus than the one referred to".

Page 30, line 22, after "deposited" insert - in pockets 150, 151 and 152 - . Line 27, after "off" insert - from pockets 150, 151 and 152 - . Line 28, change "146" to - 146' - .

Claim 32, line 5, change "of" to - or - .

#### REMARKS

Instructions have been given to the Official Draftsman to clearly indicate section lines 19--19 and 20--20 in Figure 18 of the drawings, and to show in Figure 25 a set of the pockets (150, 151, and 152) with which the tanks 132 are provided. Pipe 84 does not show in Figure

1, it being behind one of the pipes 106, and it is accordingly requested that the requirement that the numeral 84 be applied to this figure be withdrawn.

The specification has been amended to free the same from the various objections set forth in paragraphs 1 and 2 of the Office action, and also to make it clear how the material is withdrawn from pockets 150, 151 and 152 of tanks 132 through the pipes 146', 147, 148 and 149.

The requirement for division between the several sets of claims is believed to be unwarranted, and it is respectfully requested that the same be withdrawn and an action on the merits be given. It is submitted that claims 15 to 71 are properly drawn to sub-combinations of the principal combination, as described, for example, in claims 7 and 10, that none of the claims is directed to a construction or method inconsistent with the construction or method described in the principal or general combination claims 1 to 14 inclusive, and that all the claims are accordingly properly included in this application. In order to obtain the most economical and profitable working of the ore material, it is necessary to employ all parts or all steps of the apparatus or method disclosed herein, all of which parts or steps co-operate to accomplish a single and improved result. The Examiner is, of course, aware of the fact that general combination claims and claims for each of the elements and sub-combinations of the general combination may be properly joined in a single application. In this connection, the Examiner's attention is directed to page 143, Vol. 2, of Robinson on Patents, Section 528, and also to the decision in the case of National Malleable

Casting Company vs. American Steel Foundries, 182 Fed.  
626, 639, in which the Court says:-

"An inventor of a new and useful combination is not confined to his combination claims unless all of the elements are old; but if any of the elements are new and useful and show invention they may be claimed and patented either in a separate patent or by separate and distinct claims in the patent covering the combination, even though such parts are without utility save in combination with the other parts of the device."

Attention is further directed to the decision in the case of Gill vs. Wells, 22 Wall 1, in which it is stated that "a combination composed of sub-combinations \* \* \* contains three forms of patentable matter, \* \* \* the principal combination, the sub-combinations, and the elements entering into each sub-combination; and all of these are within the scope of the patent for the principal combination."

It is not clear on what grounds the Examiner considers claims 62 and 63 to be drawn to aggregations, and if the Examiner persists in this view, he is respectfully requested to state his reasons therefor. It is thought that these claims cover true combinations and that they very clearly set forth the co-operation and relative arrangement of the screens, settling tanks, settling chamber and crushing means, whereby material from the crushing means may be effectively separated and collected according to size, and whereby such of the material as is too large to pass through the screens may be re-crushed and then again subjected to the screening operation; all with an economical use of water.

For the above reasons, further and favorable  
consideration of this application is requested.

Respectfully submitted,

THOMAS A. EDISON

By *Dyer and Holden*  
His Attorneys

Orange, New Jersey

March 16, 1915

WH-JS



964 Div. 25 Room 315

Below only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-260

FPD/TFH

Paper No. 5

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

April 8, 1915

Dyer & Holden,

Edison Office Bldg.,

Orange, N.J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Ser. No. 817,976, filed Feb. 11, 1914, for

Method and Means for Treating Ores.

Thomas Ewing  
Commissioner of Patents.

6-5021

Responding to amendment filed March 17, 1915:

The requirement of division is repeated and made final.

Where an applicant presents an assemblage of devices each of which has acquired the status of an independent subject matter of invention he is not entitled to claim them all in a single application, but is entitled to prosecute only one of them in such application. In some cases claims for one of such devices and claims including combinations of such and the other devices may be considered where the combinations themselves have not acquired the status of independent subject matters of invention; such distinct status appears to exist in this case.

The question presented by this application is very similar to that which was decided in *ex parte Ramsey*, cited in the first Office letter.

Examiner, Div. 25.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

METHODS AND MEANS FOR TREATING  
ORES

Room No. 315.

Filed February 11, 1914

Serial No. 817,976

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of April  
8, 1915, please amend the above entitled case as follows:-

Cancel claims 38 to 70 inclusive.

Renumber claim 71 as 38.

R E M A R K S

In view of the first paragraph on page 3 of the  
Office action of March 19, 1914, claims 1 to 31 inclusive  
have been retained in this application.

The requirement for division has been complied  
with for the most part by canceling original claims 38 to  
70 inclusive. The right is reserved to file a divisional  
application or divisional applications on the subject mat-  
ter of these claims.

Original claims 32 to 37 inclusive and 71 have,  
however, also been retained in the application. It is  
earnestly submitted that the methods or steps recited in  
these claims are in the nature of sub-combinations of the  
methods described in claims 1 to 8, 15, 17, 20, 21 and 23.

and that no proper line of division could be drawn between these two sets of method claims. If claims 32 to 37 and original claim 71 are allowable, at all, it would seem that they are allowable in the same case with claims 1 to 8, 15, 17, 20, 21 and 23. In this connection, attention is directed to claim 7 in considering claims 32 to 37 inclusive, and to claims 4 and 7 in considering original claim 71. Claims 32 to 37 merely recite more specifically certain of the steps included in claim 7, and claim 38, original claim 71, is clearly in the nature of a sub-combination of claims 4 and 7. While method claims 32 to 37 correspond in a way to original claims 38 to 47, and original claim 71 corresponds in a way to original claims 64 to 68, it is submitted that the reason for requiring apparatus claims 38 to 47 and 64 to 68 to be divided from other groups of apparatus claims does not apply with the same force when considering the corresponding method claims (32 to 37 and 71) in connection with the remaining method claims in the application, as the methods set forth in claims 32 to 37 and 71 may obviously be carried out by other forms of apparatus than those shown in the drawings and specifically described in original claims 38 to 47 and 64 to 68.

In view of the proposed cancellation of original claims 38 to 70 inclusive and the foregoing remarks, it is respectfully requested that the final requirement for division be waived as to claims 1 to 38, which it is proposed to

retain in this application, and that this amendment be entered.

Respectfully submitted,

THOMAS A. EDISON

By

*Dyer and Holden*

His Attorneys

Orange, N. J.

March 17th, 1916

WH-JS

25

315

TFM

2-260

Paper No.

Room  
Address  
"The Commissioner of Patents,  
Washington, D. C.,  
and not my official by name."

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON Mar. 25, 1916.

Dyer and Holden,

Edison Office Building,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of  
Thomas A. Edison, Ser. No. 817,976, filed Feb. 11, 1914, for  
Method and Means for Treating Ores.

*Thomas Ewing*  
Commissioner of Patents.

Responding to the amendment filed Mar. 18, 1916:

Applicant is required to complete compliance with the final requirement of division. This requirement must be complied with before the expiry of the year allowed, on April 8, 1916.

The matter has been referred to the law examiner in accordance with amended Rule 42, who has reported back to this examiner substantially as follows:

"Claims 32-37 are devoted to the method practiced by the apparatus seen in Fig. 17, claims to the apparatus having been separated. The art of separation in vertical columns of flowing water has had an extensive development as shown by Billhars, Feb. 16, 1892, 469,037, 83--59; Bailey, Oct. 10, 1905, 801,200; Merrill, Dec. 22, 1908, 907,387; Janney, July 20, 1908, 455; Hitchcock, Sept. 21, 1909, 934,441; Hitchcock, Sept. 21, 1909, 934,611; Wiggin et al., Apr. 15, 1913, 1,058,828, and many others in class 83, sub-class 82, (arbitrary sub-class 8230;) and the absence of an official separation cannot be regarded as controlling since the present official classification of this art is an ancient one long since passed by the art itself.

The process claims 32-37 are obviously of general application apart from the system of which it is one of the elements,

and the process claims should be divided out as has been done with the corresponding apparatus claims in view of the state of the present art. In certain of the claims 1--31 the process and apparatus of fig. 17 is included as an element of the organization or system claimed but this does not affect the fact upon which the requirement is based that the process of claims 32--37 is one of broader utility and more general application than in this system and has a distinct status of its own.

Claim 38 is also required to be separated and this is approved. While the process of claim 38 is included as an element of the system, the apparatus and process should be divided for the same reasons as claims 32--37. Claim 38 ought not to be separated from claims such as original claims 64, 68, etc. divided out of the case."

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

METHODS AND MEANS FOR  
TREATING ORES

Room No. 315.

Filed February 11, 1914

Serial No. 817,976

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office actions of April 8, 1916 and March 25, 1916, applicant, in accordance with the provisions of amended Rule 42, elects to prosecute claims 1 to 31 inclusive and to retain the remaining claims in the case with the privilege of appealing from the requirement of division after final action by the Examiner on the claims hereby elected for prosecution.

An action on the merits of claims 1 to 31 inclusive is requested.

Very respectfully,

THOMAS A. EDISON

By

*Dyer and Holden*

His Attorneys

Orange, N. J.

*March 29* 1916.

WH-JS

Div. 25 Room 315

Address only  
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2-200

FPD/TFM

Paper No. 9

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

April 29, 1916.

Dysr. & Holden,

Edison Office Bldg.,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Ser. No. 817,976, filed Feb. 11, 1914, for

Method and Means for Treating Ore.

Thomas Edison  
Commissioner of Patents

6-3011

Responding to amendment filed March 30, 1915:

Claim 1 is rejected in view of Warne, May 23, 1882, 258,332, 83-59, or Hanson, Nov. 25, 1884, 308,410, 83-82. Separate treatment of the screened products is necessarily implied; such being ordinary practice where hydraulically graded products are screened - see for example Lookhart, Nov. 28, 1893, 506,818, 83-84, and items 24, 25 and 26 in the scheme as outlined on page 912, Ore Dressing, Richards, 1903, a copy of which is in Room 315, this Office.

Claim 2 is rejected in view of the same references; as is also claim 3. Note the introduction of the screen sizes of Lookhart into hydraulic classifiers.

There does not appear to be any patentable relation between the specific initial grading and the specific concentration of claim 4, and in the absence of evidence of such relation, said claim 4 is rejected.

Claim 5 is rejected as lacking invention over Lookhart cited, Custer, Mar. 9, 1915, 1,131,478, 83-56, and the Charleston separator described on page 428, Ore Dressing, supra. No invention would be involved in substituting the specific screening step of Custer, and the unwatering step of the Charleston device in



Ser. No. 817,976---2.

**Lookhart.**

Claim 6 expresses merely the uninventive and unpatentable application of the oversize re-crushing and return to the separating system to a specific separating process. This re-crushing of oversize is an ordinary step, see, for example, British specification of Stanley, 28,550 of 1906 (2 sheets drawing) 83-59. The claim is rejected in view of said Stanley and Lookhart.

Claim 7 is rejected in view of the references for claim 1 and the Charleston device referred to above.

Claim 8 is rejected as not expressing anything patentable over Lookhart of which note the skimmer.

It is not apparent that the surface skimming has any patentable relation to the subsequent separation, especially as the latter is no different from what it would be if the float be permitted to flow away with the lighter material held suspended in the liquid. However, see Langerfeld of record and Warne, Nov. 28, 1882, 268,325, 83-81, each of which shows skimming of floating material.

Claims 9 to 14 inclusive are rejected for want of patentable combination between the specific separators therein recited, in the absence of evidence of patentable coaction. The particular means for dewatering one grade (the suspended material of the initial separator) has nothing to do with the operation of the specific separators for the other grades from the initial separator.

Claim 15 is rejected in view of Bilhars of record, or Warne, 268,325, cited. In Bilhars B collects the suspended material, while in Warne it is collected by the devices of Figs. 3 and 4.

Claim 16 is rejected in view of Meinicke, Nov. 8, 1892, 485, 962, 83-82.

Claim 17 is rejected in view of Meinicke, the separation of suspended material being implied because of a quite general practice

Ser. No. 817,976---3.

in the art, even where the suspended material has no value, and an almost universal practice where they have value. There certainly would be no invention involved in separating out the suspended solids of Meinicke.

Claim 22 is rejected as anticipated in Langerfeld of record.

Claim 23 is rejected in view of Warno, 268,235, or Langerfeld.

Claims 24 and 25 are rejected as lacking invention in view of Langerfeld and Meinicke or Edison, June 16, 1908, 890,628, 83-54.

Claim 26 is rejected in view of Warno, 268,325, cited. This claim does not even distinguish over Morley or Langerfeld in which a portion of the liquid will be removed with the settled solids.

Claim 27 is rejected as not distinguishing patentably over Mokeone of record.

Claim 28 is rejected as not distinguishing patentably over Jebb, July 16, 1878, 206,115, 83-89, of which see the description of part G.

Claims 30 and 31 are rejected as not distinguishing patentably over Langerfeld of record, or Edison, Jan. 11, 1916, 1,167,638, 83-82. These claims should be made more specific or definite to distinguish over Langerfeld and to express a clearly distinct invention over Edison.

Claims 32 to 36, being subject to a final requirement of division, and not being elected, have not been considered on their merits.

= Ch 18, 19, 20, 21 & 29

Examiner, Div. 25.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

METHODS AND MEANS FOR  
TREATING ORES

Filed February 11, 1914

Serial No. 817,976

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
April 29, 1916, please amend the above entitled case as  
follows:-

Cancel claims 1, 2 and 3.

Claims 5 and 6, line 9, after "uniform" insert -  
and substantially horizontal - .

Claim 7, line 10 and claim 8, line 11, after  
"uniform" insert - and substantially horizontal - .

Cancel claim 15.

Claim 15, line 2, after "liquid" insert - in a  
direction transverse to such flow - . Line 5, after  
"liquid" insert - immediately upon its introduction there-  
in - . Line 6, cancel "effect" and insert - and trans-  
porting effects - .

Claim 17, line 2, after "liquid" insert - in a  
direction transverse to such flow - . Line 5, after  
"liquid" insert - immediately upon its introduction there-  
in - . Line 6, cancel "effect" and insert - and trans-  
porting effects - .

Cancel claims 22 and 23.

a  
Claim 24, line 7, before "substantially" insert -  
said means extending from a point adjacent the place of  
introduction of the ore into said flow downwardly in said  
flow, - .

Claim 25, line 7, cancel "arranged in the tank  
below the point" and insert - extending from adjacent the  
place - . Line 8, after "ore", first occurrence, insert  
- into said flow downwardly in said flow - .

Claim 26, line 7, cancel "said flow of liquid"  
and insert - the uniformly moving liquid of said flow - .

Claim 27, line 5 and claim 28, line 4, after  
"liquid" insert - in an endless path - .

Claims 30 and 31, line 2, after "elongated"  
insert - non-communicating - . Same claims, line 13,  
after "therein" insert - at a point beyond that where the  
denser ore constituents are deposited - .

Renumber claims 4 to 14, 16 to 21 and 24 to 38  
as 1 to 32 inclusive respectively.

Add the following claims; -

a  
26. The method of treating ore which consists  
in maintaining a flow of liquid in an endless bath, intro-  
ducing ore into such flow of liquid whereby the lighter ore  
constituents will be washed away from the denser ore con-  
stituents, and separating a relatively small portion of  
the liquid from such flow at a place beyond the point of  
introduction of the ore therein, substantially as described.

27. In apparatus of the class described, a tank,  
means for producing a substantially uniform flow of liquid  
in said tank, and means for introducing ore into such flow  
of liquid, whereby the denser ore constituents will be de-

posited in the tank and the lighter ore constituents will be washed away and held in suspension by the liquid, said tank comprising means for separating a portion of the liquid <sup>containing only suspended ore constituents</sup> from said flow of liquid <sup>substantially throughout its depth</sup> ~~at a place beyond where said denser ore constituents are deposited in the tank~~, substantially as described. -

#### REMARKS

All the claims as now presented are believed to clearly and patentably distinguish from the references of record.

It is believed that the rejection of claim 1, former claim 4, is improper. It is submitted that there is a patentable relation between the specific initial grading and the specific concentration recited in this claim, for this manner of concentrating insures the separation of the ore constituents into portions of different densities and the deposition of these portions of different densities in the liquid in the same length of time, thereby enabling an amount of ore to be uniformly and continuously fed into the flow of liquid employed in the initial grading that will be thoroughly and properly treated in the concentrating step. As indicated in the paragraph in lines 5 to 7, page 2 of the Office action of March 19, 1914, this claim covers a series or combination of steps, and it is submitted that, for the reasons specified, the concentrating step recited therein bears such a relation to the initial grading step as to confer patentability on this claim.

Claim 2, former claim 5, as now presented, distinguishes from the references cited by specifying the step of concentrating the ore portions passed through the screens by respectively subjecting the same to the effects of a plurality of substantially uniform and substantially horizontal flows of liquid. This insures the separation and deposition of the ore constituents into separate portions in accordance with their densities at points where they may be readily and separately collected.

Claims 3, 4 and 5, former claims 6, 7 and 8 respectively, distinguish from the references in a manner similar to that indicated in connection with claim 2.

It is thought that the rejection of claims 6 to 11 inclusive, former claims 9 to 14 inclusive respectively, for the reasons specified, is unwarranted. It is submitted that the dewatering means for the suspended material from the initial separator and the separators for the denser grades from the initial separator, assembled in the manner specified, coact to produce a novel system wherein all the ore constituents of the initial separator are continuously separated and deposited in a uniform manner, thereby enabling the entire system to be operated at a definite and regular rate. It is not necessary for a proper combination claim that each element shall act on all of the other elements, it being sufficient if they coact to produce a new and useful result.

Claims 12 and 13, former claims 16 and 17, as amended, clearly distinguish from Meinicke by specifying

that the ore is introduced into the flow of liquid in a direction transverse to such flow and the step of retarding the flow of gravity of the ore introduced into the flow of liquid immediately upon its introduction therein.

Claim 18, former claim 24, distinguishes from the references by specifying that the means for retarding the descent of the ore in the liquid extends from a point adjacent the place of introduction of the ore into such flow downwardly in said flow. Patent No. 890,625 to Edison discloses a device for a purpose altogether different from that of applicant's. Moreover, the device disclosed in this patent does not employ liquid for separating the material treated therein.

Claim 19, former claim 25, distinguishes from the references in a manner similar to that indicated in connection with claim 18.

Claim 20, former claim 26, as now presented, clearly distinguishes from the references by specifying that the tank comprises means for separating a portion of the liquid from the uniformly moving liquid of the flow at a point beyond the place of introduction of the ore into said flow.

Claim 21, former claim 27, distinguishes from McKeone by specifying means for producing a substantially uniform flow of liquid in an endless path in one of the tank portions, and means for introducing ore into the flow of liquid at a place remote from the other of the tank portions.

Claim 22, former claim 28, as amended, clearly distinguishes from Jebb by specifying means for producing a substantially uniform flow of liquid in an endless path in one of the tank portions.

Claim 24, former claim 30, clearly distinguishes from Langerfeld and Edison No. 1,167,638 by specifying a pair of substantially horizontal non-communicating tanks, and also by specifying that one of the tanks comprises means for separating liquid having ore constituents suspended therein from the flow of liquid in such tank at a point beyond where the denser ore constituents are deposited therein.

Claim 25, former claim 31, distinguishes from the references in a manner similar to that indicated in connection with claim 24.

New claim 33 distinguishes from the references by specifying the steps of maintaining a flow of liquid in an endless path, introducing ore into such flow of liquid, and separating a relatively small portion of the liquid from such flow at a place beyond the place of introduction of the ore.

New claim 34 distinguishes from the references by specifying that the tank comprises means for separating a portion of the liquid from the flow of liquid at a place beyond where the denser ore constituents are deposited in the tank.

In view of the above, further consideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By

*Dyer and Holden*

His Attorneys

Orange, N. J.

April 27, 1917

WB-JS



Div. 25 Room 315

2-200

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

FFD/TFM

Paper No. 11

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

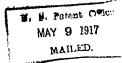
WASHINGTON

May 9, 1917

Dyer & Holden,

Edison Office Building,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Sr. No. 817,975, filed Feb. 11, 1914, for Method  
and Means for Treating Ores.

Thomas Ewing  
Commissioner of Patents.

c 6-2821

Responding to the amendment filed April 28, 1917:

Claim 1 is rejected for want of patentable relation between the specific initial and the specific final separating steps. In Lockhart, 509,818, of record, the ore is introduced into a flow of water in B in which the lighter will be washed away through the discharge A<sup>2</sup> and the remainder is sized in B and the respective sizes are passed to jig boxes which, as is well known in the art, operate by water flow which must be proportioned to the particular ores. As a sub-combination of steps in said Lockhart, material delivered to G is separated by water flow therein, the lighter passing out over skimmer k, while the heavier or denser pass to the screen k which sub-divide it into sizes, each size passing to a hydraulic separator b in which the flow in each separator is adjusted to suit the particular size of material being treated. It is not at all evident that the substitution of specifically different but equivalent separating steps, which, moreover, are broadly old (Langerfeld, Jebb, of record), with mere adjustments of dimensions to suit the respective sizes of material treated establishes a patentably different process over Lockhart. Said claim 1 is therefore further rejected as not patentable over Lockhart and the other references noted above.

Ser. No. 817,976--2-<sup>1</sup>

Claim 2 is rejected on the same grounds. Note lines 40 to 46, page 3, of Lockhart, suggesting what amounts to settling of the sizes after passing through the screens, and note also Custer and the Charleston reference in Ore Dressing of record.

Claim 3 merely adds to the process of claim 2 which is not considered patentable, the step of crushing oversize and returning it to the separating system, old in British specification of Stanley of record, and therefore adding nothing patentable to the process. Said claim is therefore rejected.

Claim 4 is rejected as not patentable over Lockhart in view of the settling and removing by elevator (lines 40-46, page 3) which is a species of dewatering, Custer and Warne, of record. In Warne the trough C will discharge an unwatered screened product to the separator D.

Claim 5 is rejected for want of patentable relation between the specific initial and the specific final separating steps, and as unpatentable over Lockhart and Langerfeld of record.

Claims 6 to 11 inclusive are rejected for lack of patentable combination between the various specific elements therein. No cooperation between the towers - a specific decanting device for separating water from the solids so the water may be reused - and the screens and final separators is apparent.

Claim 12 is rejected in view of Figs. 15, 16, of British specification of Brunton, 9135 of 1841, or German patent to Schranz, 134,740, published Oct. 4, 1902, (Klasse 14; 1 sheet of drawing), 83-59; as is also claim 13.

Claim 14 is indefinite as to "separating a relatively small portion of liquid", and is inaccurate or indefinite as to the "whereby" clause since the removal of a part of the liquid has nothing to do with the enrichment of the bulk of liquid with slimes. This "whereby" clause, if retained, should be relocated. This claim 14 does not distinguish patentably over Morley or Langerfeld of

ser. No. 817,976---3.

record in which a portion of the liquid is necessarily removed with the solids, for which reason the claim is rejected. *Not patentable*

Claim 15 is rejected as not patentable over Langerfeld or Morley of record, taken with Brunton or Schranz cited.

The whereby clauses of claims 15, 16 and 17 should be transposed.

Claim 16 is rejected as without invention in view of Warne, 258,332, and 260,325, of record. The former discloses a separator in which the water may be returned through the apparatus or circulated, and the latter shows the application to the device of the former of an attachment drawing off part of the water with suspended slimes and the separation of the slimes. It does not appear that any invention would be involved in the application of such draw-off and recovery of slimes to a device such as that of Morley or Langerfeld.

Claim 17 is rejected in view of the same references and Schranz or Brunton cited.

Claim 18 is rejected in view of Morley or Langerfeld, taken with Schranz or Brunton cited.

Claim 19 is rejected as lacking invention over the references for claim 16, and Edison, 890,625, of record, it being held that the use of Edison's baffles for an analogous purpose of retarding the fall of material in a different separating fluid-liquid instead of gaseous- involves no invention in view of the use of the retarding means of Schranz in liquid.

Claim 20 does not distinguish from and is rejected in view of Langerfeld or Morley, because the discharges for solids remove a part of the liquid; nor does it express any invention over said references in view of the Warne patents of record.

Claim 21 is rejected in view of Jebb of record, in which gate G regulates the control of communication between B and E, and Morley or Langerfeld showing the endless circuit. It seems clear that no invention would be involved in extending E of Jebb to return

Ser. No. 817,976---4.

the water ~~to the feed~~.

Claim 22 is rejected on the same ground since C of Jebb, as described, has controllable openings.

<sup>23</sup> Claim 24 is rejected as lacking invention in view of Warne, 258,332 of record. In said Warne material separated in C is elevated to D which has no liquid communication with C. In view thereof it does not appear that it would be a matter of invention to provide a separate tank for the second water current separation of Langerfeld. If there is any combinative relation between the two specific tanks, which is not apparent, the water removing means of the second tank should be distinguished from the discharging means of Langerfeld, which removes water with the discharged solids. The 24th claim is further rejected as lacking patentable combination between the two specific tanks.

Claim 25 is rejected upon the same ground of lack of patentable combination.

Claims 33 and 34 are rejected as not distinguishing over Langerfeld and Morley in view of the discharge of water with the solids. As to claim 34, obviously liquid is discharged with the solids beyond the first (denser) grade. Said claims are further rejected as lacking invention in view of said Langerfeld or Morley, taken with the Warne patents of record.

This application has been pending over three years, and response to this action should be prompt. The next action by the Office probably will be final rejection unless the present grounds of rejection are avoided.

= claim - 23,

Examiner, Div. 28.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

METHODS AND MEANS FOR TREATING ORES

Room No. 315.

Filed February 11, 1914

Serial No. 817,976

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
May 9, 1917, please amend the above entitled case as follows:

Page 7, lines 3, 4 and 5, cancel "in a manner similar to that described in my pending application referred to above".

Claim 1, cancel lines 2, 3 and 4 and insert -  
separating the lighter ore constituents from the denser ore  
constituents. - . Line 6, after "such" insert - sized - .  
Line 7, before "flows" insert - substantially horizontal - .  
Cancel claims 2, 3, 4 and 5.

Claim 6, line 7, before "means" insert - and - .  
Lines 11 to 16, cancel "a screening device \* \* \* \*  
of the screening device,".

Claim 7, line 7, before "means" insert - and - .  
Line 11, after "tower" insert - adjacent the lower end there-  
of - . Lines 11 to 19, cancel "a screening device \* \*  
\* \* \* \* said tanks,".

Claim 8, line 6, before "means" insert - and - .  
Lines 11 to 16, cancel "a screening device \* \* \* \*  
said screens".

Claim 9, lines 11 to 16, cancel "a screening de-  
vice \* \* \* \* said screens,".

Claim 10, line 6, before "means" insert - and - .  
Lines 16 to 21, cancel "a screening device \* \* \* \* \*  
said screens,".

Claim 11, line 6, before "means" insert - and - .  
Lines 19 to 24, cancel "a screening device \* \* \* \* \*  
said screens,".

Rewrite claims 12 and 13 as follows:-

12. The method of treating ore, which consists in introducing ore into a flow of liquid in a direction transverse to such flow, whereby the lighter ore constituents will be washed away and held in suspension by the liquid, and guiding the ore across the flow of liquid in a zigzag path, whereby the effect of gravity on the ore will be retarded and the length of time the ore will be subjected to the washing and transporting effects of the flow of liquid will be increased, substantially as described.

13. The method of treating ore, which consists in introducing ore into a flow of liquid in a direction transverse to such flow, whereby the lighter ore constituents will be washed away and held in suspension by the liquid, guiding the ore across the flow of liquid in a zigzag path, and separating the suspended ore constituents from the liquid, substantially as described. -

Claim 14, line 4, after "whereby" insert - the denser ore constituents will be deposited in the flow and - .  
Cancel lines 7 to 10 inclusive and substitute - constant, and continuously withdrawing directly from such flow a

relatively small but definite and predetermined proportion thereof at a place beyond where the denser ore constituents are deposited, substantially as described. - .

B<sup>1</sup>

Claim 15, line 4, after "whereby" insert - the denser ore constituents will be deposited in the flow and -  
Cancel lines 10 to 14 inclusive and substitute - liquid substantially constant, and continuously withdrawing directly from such flow a relatively small but definite and predetermined proportion thereof at a place beyond where the denser ore constituents are deposited, substantially as described. - .

B<sup>2</sup>

Claim 16, line 4, after "whereby" insert - the denser ore constituents will be deposited in the flow and -  
Cancel lines 7, 8 and 9 and substitute - constant, continuously withdrawing directly from such flow a relatively small but definite and predetermined proportion thereof at a place beyond where the denser ore constituents are deposited, - . Line 10, cancel "rich in slimes".

Claim 17, line 4, after "whereby" insert - the denser ore constituents will be deposited in the flow and -  
Lines 10 to 13, cancel "separating a relatively small portion of the liquid from such flow at a place beyond the place of introduction of the ore, whereby the flow of liquid will become rich in slimes" and insert - continuously withdrawing directly from such flow a relatively small but definite and predetermined proportion thereof at a place beyond where the denser ore constituents are deposited - .

Cancel claims 18 and 19.

Rewrite claim 20 as follows: -

B3

14. In apparatus of the class described, a tank, means for producing a substantially uniform flow of liquid in said tank, means for introducing ore into such flow of liquid, whereby the denser ore constituents will be deposited in the flow and the lighter ore constituents will be washed away and held in suspension by the liquid, said tank comprising means for continuously separating a comparatively small but definite and predetermined portion of the liquid directly from the main body of uniformly moving liquid of said flow at a place beyond where the denser ore constituents are deposited, and means for collecting and removing the ore constituents deposited in the tank, substantially as described. -

Claim 21, line 4, change "producing" to - producing - . Cancel line 5 and the amendment thereto and substitute - uniform flow of liquid in an endless path wholly within one of said tank portions, and - .

Claim 22, cancel line 4 and the amendment thereto and substitute - a substantially uniform flow of liquid in an endless path wholly within one of said tank - .

Cancel claim 24.

Claim 25, line 1, cancel "pair of". Line 2, cancel "non-communicating". Same line, change "tanks" to - tank - . Line 3, cancel "each of". Line 4, change "tanks" to - tank - ; cancel "each of"; and change "flows" to - flow - . Line 6, cancel "each" and insert - said - . Line 8, change "tanks" to - tank - . Lines 9 to 11 cancel "means for feeding deposited ore constituents and liquid, with ore constituents suspended therein, from one of said tanks into the other of said tanks". Lines 11 and 15, cancel "last".



Claim 33, line 5, after "and" insert - continuously  
- . Line 6, after "liquid" insert - directly - . Same  
line, after "flow" insert - substantially throughout the  
depth thereof and - .

Claim 34, line 4, cancel "the denser" and insert -  
some of the - . Line 4, after "liquid" insert - containing  
only suspended ore constituents - . Lines 5 and 9, cancel  
"at a place beyond where said denser ore constituents are  
deposited in the tank" and insert - substantially throughout  
its depth - .

Renumber claims 6 to 11 inclusive as 2 to 7 inclusive  
respectively; claims 14 to 17 inclusive as 10 to 13  
inclusive respectively; claims 21, 22 and 23 as 15, 16 and  
17 respectively; and claims 25 to 34 inclusive as 18 to 27  
inclusive respectively.

#### R E M A R K S

It is believed that the present amendment fully  
avoids the grounds of rejection set forth in the last Office  
action, and that the claims remaining in the application  
which were considered in such action clearly and patentably  
distinguish from the references as now presented.

Claim 1 as amended does not set forth any specific  
initial separating step and accordingly the rejection thereof  
for want of patentable relation between the initial and final  
separating steps should be waived. This claim, it is sub-  
mitted, also patentably distinguishes from Lockhart, Langer-  
feld and Jebb of record. Langerfeld and Jebb merely dis-  
close the idea of separating ore or other material in accord-

ance with density by means of a single flow of water. Lockhart absolutely fails to disclose the idea of separating a plurality of sized portions of ore material according to their densities by respectively introducing such portions into a plurality of substantially horizontal flows of liquid. Even though the water flow in the jig boxes employed by Lockhart to treat the ore sized in B must be proportioned to the particular sized ores, there is no suggestion whatever in this patent that the water flows in the various jig boxes are so proportioned that the respective sizes of ore introduced into the jig boxes at the same time will be treated and separated in accordance with their densities in substantially equal intervals of time. These statements also hold true with reference to the flows of water in the separators b for the ore material sized by the screen K. The Examiner has failed to cite any reference disclosing the idea of employing a plurality of substantially horizontal flows of liquid for respectively separating a plurality of sized ore portions, the depths and rates of which flows vary directly in proportion to the sizes of the ore portions introduced therein so that such portions will be separated and deposited according to their densities in substantially equal intervals of time. The advantages of this are obvious, namely, the separation of the various sized ore materials in accordance with their densities in a uniform manner, and the continuous treatment of ore material at the greatest possible rate without interruption.

Claims 2 to 7, former claims 6 to 11 inclusive, have been amended to eliminate therefrom the screening de-

vice and the final separator or concentrator, thus avoiding the ground of rejection set forth in the last Office action.

Claims 8 and 9, former claims 12 and 13, as rewritten clearly distinguish from British patent 9135 of 1841 and German patent 134,740 by specifying the step of guiding the ore across the flow of liquid in a zigzag path. By feeding the ore in this manner across the flow of liquid, the ore, in addition to being retarded in its descent in the liquid, will also be turned over and over and accordingly will be subjected to a much more thorough washing than if it were merely fed down an incline.

Claims 10 to 13, former claims 14 to 17, have been amended to overcome the objection thereto as inaccurate or indefinite. It is submitted that each of these claims as amended also patentably distinguishes from the references by specifying the step of continuously withdrawing directly from a substantially uniform flow of liquid in an endless path a relatively small but definite and predetermined proportion thereof at a place beyond where the denser ore constituents are deposited. In Morley and Langerfeld there is no continuous withdrawing of a portion of the liquid from the endless flow by which the material is separated. Moreover, in both of these references any liquid removed is removed with the solids deposited in the pockets at the bottom of the flow and not at a point beyond where the ore materials are deposited. The patents to Warne fail to disclose a uniform flow of liquid in an endless path. Moreover, neither of the patents to Warne discloses the idea of withdrawing the water containing material in suspension directly from the main flow.

the water with the suspended material therein being withdrawn from substantially stationary bodies of water in the pockets E. It is not at all apparent how the draw-off disclosed by Warne could be combined with a device such as that of Morley or Langerfeld to obtain a device capable of being employed in accordance with the method recited in these claims, without the exercise of invention.

Claim 14, former claim 20, distinguishes from Langerfeld, Morley and Warne of record for reasons similar to those stated in connection with claims 10 to 13. This claim further distinguishes from these references by specifying means for collecting and removing ore constituents deposited in the tank and, in addition, means for separating a portion of the liquid from the flow of liquid.

The rejection of claims 15 and 16, former claims 21 and 22 on Jobb, Morley and Langerfeld is not understood. However, these claims have been amended in an attempt to still further distinguish from these references. Each of these claims brings out that the tank is divided into two portions and specifies means for producing a substantially uniform flow of liquid in an endless path wholly within one of such tank portions. Even if the part E of Jobb's apparatus were extended so as to return the water to the reservoir C, these two claims would not be met, for in this case the endless flow of liquid would be partly in the section B and partly in the Section E, that is, on each side of the gate G which controls communication between the sections B and E. In applicant's apparatus, on the other hand, the endless flow of liquid is wholly within one section of the tank and to

one side of the means for dividing the tank into two sections and adjustably controlling communication between such sections. In applicant's device, the means for controlling communication between the two tank portions serves as a means for withdrawing a portion of the liquid from the endless flow in one tank, whereas in Jebb's apparatus the entire flow of liquid passes from the section B to the section E through the gate G.

Claim 17, former claim 23, stands allowed.

Claim 18, former claim 25, as amended is limited to a single tank and accordingly, the rejection thereof upon the ground of lack of patentable combination should be waived.

Claim 26, former claim 33, as now presented clearly distinguishes from Langerfeld, Morley and the Warne patents of record by specifying the step of continuously separating a relatively small portion of the liquid directly from the flow of liquid substantially throughout the depth thereof. As stated above, none of these references discloses the idea of continuously separating a portion of the liquid directly from the flow of liquid. Moreover, none of the references discloses the step of continuously separating liquid from the flow and substantially throughout the depth of the flow.

Claim 27, former claim 34, distinguishes from the references in a manner similar to that indicated in connection with claim 26. This claim further distinguishes from Langerfeld, and Morley by specifying means for separating a portion of the liquid containing only suspended ore con-

stituents from the flow of liquid.

In view of the above, further consideration and allowance of claims 1 to 16, 18, 26 and 27 is requested.

Respectfully submitted,

THOMAS A. EDISON

By *Dyer and Holden*  
His Attorneys

Orange, N. J.

May 6, 1918

WH-JS

Div. 25, Room 315

2-280

Address only

"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

FFP/TFM

Paper No. 13

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

May 15, 1918.

Dyer & Holden,

Edison Office Building,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Ser. No. 817,976, filed Feb. 11, 1914, for

Method and Means for Treating Ores.

James S. Houston  
Commissioner of Patents.

4-281

Responding to the amendment filed May 7, 1918:

Claim 1 involves substantially no more than the substitution for the final hydraulic separating step of Lockhart, of record, a separating step which is the equivalent thereof and old in Jebb or Langerfeld of record and, like Lockhart, involves the settling of solids in liquid flows according to the densities of the particles. Proportioning of the forces employed to the particular grades being treated is an obvious expedient of the art; and it is to be noted that the apparatus which necessarily carries out the particular hydraulic (last) step of this claim is patented to applicant in patent 1,167,638, of record.

Claims 2 to 7 inclusive, are rejected as not patentable over Bilharz, of record, showing hydraulic classifying elements followed by settling means B for the matter in suspension from the former, the mere substitution in this old combination of elements performing equivalent functions not patentably altering the combination even though these substituted elements may be novel per se.

It does not appear that the application of retarding baffles such as 7 of Edison, 890,625, of record, in a device which differs from Edison, 890,625, in the particular fluid employed,

Ser. No. 817,976---2.

involves invention when the function of the baffles is analogous whether the fluid be liquid or gaseous, especially as it is old, as shown in Schranz of record, to employ retarding devices which detain the material in a liquid flow. Claims 8 and 9 are therefore rejected in view of said Edison and Schranz.

Claim 18 is rejected in view of Langerfeld, of which see D<sup>4</sup>, Fig. 18, this claim not distinguishing from a device having means taking the whole of the liquid flow from the primary chamber.

Claims 19 to 25 inclusive are subject to a final requirement of division.

The claims not specified above may be allowed as at present advised.

This action is final.

= 10, 11, 12, 13, 14, 15, 16, 17, 26, & 27

= 10

R. 10

Acting Examiner, Div. 25.



Folio \_\_\_\_\_

STATEMENT OF INVENTOR

Invention

Conceived on Feb 1913 Made sketches on March 1913  
Disclosed to J. A. Ballantine Date Feb 1913  
" " Fred Lavin " " "  
Made drawing June 1913 Finished on June 1913  
Model or complete working device started Feb 1913  
Finished on May 1913  
Is the invention in use? No

General Description of  
Invention.

1. Regr. Received by Wm R. Hardy Date June 1913  
Inventor T. A. Edison  
Remarks Classifier conceived April 12 Screens June 12  
Working device started May 12 finished June 12

Note: This statement, together with sketch, to be put in the  
application file.

Hand-drawn schematic diagram of a water supply system for a building. The diagram shows a main water line entering from the left, branching into two vertical risers. The left riser has a 4-inch pipe and a 6-inch pipe. The right riser has a 5-inch pipe. Various valves, including gate valves and check valves, are indicated. Dimensions like 4 ft, 6 ft, and 18 ft are noted. The diagram is drawn on a grid background.

PERSONAL CORRESPONDENCE  
HENRY B. CLIFFORD

Dec 7 1913

My dear Mr Hardy

I have just sent Mr Edison a new thought on the Classifier. If it's any good he may want it to go in the Patents. After he reads my letter please tell him. I look on it as important

Yours  
Henry Clifford

Sold up.

NEW YORK CABLE ADDRESS "WALDORF NEW YORK"  
PHILADELPHIA CABLE ADDRESS "BELLEVUE PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.  
THE BELLEVUE-STRATFORD, PHILADELPHIA.



THE BELLEVUE-STRATFORD



THE ASTORIA.

## The Waldorf-Astoria,

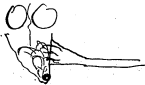
New York, Dec 9 1913

Mr Hardy  
Sir

Ask Mr Edison if any  
idea of winning off the shins by pipes  
before the shins scatter through 10000  
gallons of water in the classifier, is  
of any value =

Every 6 minutes 300 pounds of shins  
enter 10000 gallons and unless  
we get this shins out in one hour  
the 10000 gallons is filled & if  
we try to get all the shins out at  
the end we would have to draw  
off 2000 or 3000 galls a minute

and pump this amount back 10 feet high. By my new idea we do not let all the slime enter the 10000 galls but the thought is to float the slime off in the hopper over the clarifier and down to the end of the clarifier and pull it under a 12 foot tower and the rising water in the tower disintegrates the clarifier itself as follows



slime in the hopper & let slime water into the pipe. These floats to the lengthwise and about one inch below each other so as to cover the entire body of floating slimes

NEW YORK CABLE ADDRESS "WALDORF," NEW YORK.  
PHILADELPHIA CABLE ADDRESS "BELLEVUE," PHILADELPHIA.



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA.

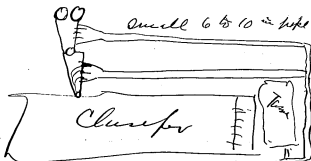
THE WALDORF-ASTORIA, NEW YORK.  
THE BELLEVUE-STRATFORD, PHILADELPHIA.

## The Waldorf-Astoria,

New York,

1911

We could make a sensible hopper  
& this get more shine out by  
having the front hopper roll  
fed into an under hopper & here  
also a pipe about 1 foot lower  
than top pipe



thus automatically we save off  
much of the affection of the machine

before it ever goes into  
the clamps

I want to know if the  
idea is good. We  
should know as our  
object is to keep shiners  
out of the 10000 falls part  
of the crushed ore as much  
as possible so we will  
draw the smallest amount  
of water from the classifier  
at the shine gate



This shine gate is my idea  
but I fear it will not  
draw off enough shiners without  
too much water coming through  
the holes. Yours, H. P. [Signature]



EN ROUTE  
NEW YORK CENTRAL LINES

Jan 4 1917

My dear Mr Hardy

I hope you will  
get the Edison  
patents in at an  
early date. I have  
Duffie & Benfield working  
on my combination  
Classifier & Stone Eliminator  
following the design  
not to have any ideas  
without your

Yours  
H B Phillips



21  
DYKE & CAMFIELD  
PATENTS AND PATENT CAUSES  
TRADE MARKS AND COPYRIGHTS

HERBERT H. DYKE  
WM. H. CAMFIELD

KIRNEY BUILDING - 730 BROAD STREET  
NEWARK, N. J.  
TELEPHONE 2816 MARKET

Jan. 19, 1914.

Mr. William A. Hardy,

C/o Thomas A. Edison, Inc.,

West Orange, N. J.

Dear Sir:-

Below are the filing dates and serial numbers of

Mr. Henry B. Clifford's three applications for patents:

Ore Separators and Sizing Feeders, filed Dec. 23, 1913,

Serial No. 808,493;

Slime or Tailing Separators, filed Dec. 16, 1913, Serial

No. 807,014;

Ore Tables, filed Dec. 16, 1913, Serial No. 807,015.

Yours very truly,

*Dyke & Camfield*

*Were there no claims allowed*  
*(See attached memo)*  
*W. A. Hardy*

March 11, 1916

Mr. Edison:-

I am sending you herewith our copies of the papers in an application (Folio 964) covering an invention of yours relating to the treatment of low grade ores, with respect to which invention and also a prior invention of yours, you entered into a license agreement with the late Henry B. Clifford. Some time ago, Mr. Clifford assigned his rights under the license agreement to the Silver Plume Reduction Company of Colorado.

The question now arises as to whether or not you wish the prosecution of the application continued. The application is under final rejection, and in order to properly prosecute the same it will be necessary to file an appeal, which will cost \$10.00, and to make an argument thereon, which will cost possibly \$25.00. In this connection it is to be noted that there is nothing in the above mentioned license agreement which renders it obligatory for you to obtain a patent on the invention.

Kindly advise what you wish done in this matter.

WH-JS

*William A. Hardy*

*If can be kept open for several  
months for \$35.00  
do it - I want to hear from  
Colorado*

F-964

3. Leave in chs 1-31 inclusive

If Mr. Edison  
approving  
head with  
application) Of remaining ch. take out all those on application  
leaving in those on process or out-process,  
file argument as to why all claims left in con-  
sidered. be examined in one application with a  
view to overcoming final rejection. Also file an  
appeal on the requirement for division as to be  
on each side. (\$10.00 to file and about 25.00 to  
argue).

1. Look up Clippel agreement & see if there is  
anything binding us to take out patent on  
this application (F969)

2. Write answer to Mr. Edison stating that  
if we prosecute then can properly necessary  
to take an appeal, which costs \$10.00 to file  
and \$25.00 <sup>plus</sup> is \$25.00 or to argue. Tell Oak here.  
If he is still interested in matter & wish to  
obtain patent on same.

March 13, 1916

Mr. Edison:-

This memorandum is supplementary to the attached memorandum of March 11, 1916. The final rejection in the application referred to in the attached memorandum is based on a requirement for division between five sets of claims, which, if complied with, will necessitate the obtaining of five distinct patents to fully cover all features of the invention. Until the matter of this requirement for division is disposed of, the Patent Office refuses to make any action with respect to the patentability of the claims. While the requirement for division appears to be justifiable as between certain groups of claims covering different parts of the apparatus, it is thought that this requirement is improper as to the method claims contained in the application. Accordingly, if you decide to have the prosecution of the application continued, Mr. Holden thinks it would be advisable to appeal from the requirement for division insofar as it involves the method claims, especially as it would seem that better protection of the invention will be afforded by the method claims than by the apparatus claims which, in view of the prior art, would necessarily be more or less restricted to the specific form of apparatus shown in the drawings.

*William A. Hardy*

WH-JS

*Mr Hardy*

April 20, 1917

Mr. Edison:-

FOLIO 964

The accompanying application (Folio 964) covering a method and means for treating low grade ores is due for amendment on April 29, 1917. About a year ago you stated that you did not wish the prosecution of this application continued unless you were reimbursed for the expense incurred in connection therewith.

In view of the proposed agreement with Mr. Ballantine and his associates, however, it would seem advisable to amend this application in order to prevent the same being held abandoned at this time. Will you kindly approve this course.

The agreement referred to above and which was approved by you was mailed on April 5, 1917 to Stanton Clarke of Detroit, the attorney representing Mr. Ballantine and his associates. We have heard nothing from Mr. Clarke since mailing the agreement to him.

*William A. Hardy*

WH-JS

*OK YAG go ahead*

*When Contract signed  
+ money named in it  
to pay - YAG*

**Patent Series**  
**Patent Application Files**

Folio # 960      Storage Batteries

Serial #:            815946

Primary Applicant: Hutchison, Miller Reese

Date Executed:    1/31/1914

[PHOTOCOPY]

Folio No. 960

Serial No. 815946

Applicant.

Address.

Allen Rice Hutchinson

Hewitt Park

West Orange, N. J.

Title Storage Batteries

Filed February 2-1914

Examiner's Room No. \_\_\_\_\_

Assignee Edison Storage Battery Co.

Ass't Exec. James J. 31-1914 Recorded Feb 2-1914 Liber 294 Page 25

Patent No. \_\_\_\_\_ Issued \_\_\_\_\_

ACTIONS.

- |                   |                         |
|-------------------|-------------------------|
| 1 <u>Rejected</u> | 16 <u>March 7, 1914</u> |
| 2 _____           | 17 _____                |
| 3 _____           | 18 _____                |
| 4 _____           | 19 <u>Revised</u>       |
| 5 _____           | 20 <u>by</u>            |
| 6 _____           | 21 <u>provisional</u>   |
| 7 _____           | 22 _____                |
| 8 _____           | 23 _____                |
| 9 _____           | 24 _____                |
| 10 _____          | 25 _____                |
| 11 _____          | 26 _____                |
| 12 _____          | 27 _____                |
| 13 _____          | 28 _____                |
| 14 _____          | 29 _____                |
| 15 _____          | 30 _____                |

*Handwritten signature/initials*

DYER & HOLDEN,  
ORANGE, NEW JERSEY.

Written lightly in pencil on the original envelope:

"Don't use - no chance for broad claims - see patent  
[unreadable].  
Hutch recommends dropping this case. Dec. 21, 1914."

"Abandoned per instructions of T.A.E. on Dec. 29, '14.  
See notation on back of print of drawing. W.A.H."

12/13/93  
KDB



# Petition.

---

To the Commissioner of Patents:

Your Petitioner **MILLER REESE HUTCHISON**  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

## STORAGE BATTERIES

set forth in the annexed specification; and he hereby appoints Dyer & Holden, (Registration No. 3244), a firm composed of Frank L. Dyer and Delos Holden, whose address is Edison Office Building, Orange, New Jersey, his attorneys with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

*Miller Reese Hutchison*

# S P E C I F I C A T I O N

TO ALL WHOM IT MAY CONCERN:-

BE IT KNOWN, that I, MILLER REESE HUTCHISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in STORAGE BATTERIES, of which the following is a specification:-

My invention relates to storage batteries of the type in which a plurality of pockets containing active material are secured to a conducting plate or grid, and is an improvement on the inventions disclosed in Letters Patent Nos. 696,812 and 976,792, granted August 25, 1908 and November 22, 1910 respectively to Thomas A. Edison. In these patents is shown a plate or grid having parallel flanges provided with integral tongues situated in vertical alignment with each other, which tongues are bent over the flattened ends of the tubular pockets containing the active material, the tubular pockets thus being secured side by side to the grid. The grid is formed of thin sheet metal, such as nickel plated steel, and the pockets are formed of thin perforated resilient metal of high tensile strength, such as nickel plated steel, the metal strip of which the tubes are formed being wound spirally, a spiral joint thus being formed about each tube. The tubes are filled with active material which has been tamped therein under high pressure.

In the construction shown in these patents, the elongated, tubular pockets are liable to bend or buckle,

since they are secured only at their ends, and the liability to bending or buckling is increased when the tubes are of very small diameter. This bending or buckling of the tubular pockets may cause the short-circuiting of plates of opposite polarity in the battery.

The object of my invention is to provide against this contingency, and for this purpose I provide means for preventing such bending or buckling and for retaining the pockets in alinement. My invention consists also in the combinations of parts and details of construction hereinafter described more fully and claimed.

In the further description of my invention, reference is had to the drawings accompanying and forming a part of this specification, and in which -

Figure 1 is a vertical side elevation of a storage battery element embodying my invention;

Figure 2 is a view similar to Figure 1 showing a slight modification;

Figure 3 is a horizontal section on the line 3-5 of Figure 1;

Figure 4 is a horizontal section through a storage battery element embodying a modified form of my invention;

Figure 5 is a vertical side elevation of a portion of the element shown in Figure 4;

Figure 6 is a vertical side elevation of a portion of the element shown in Figure 4 showing a slight modification;

Figures 7, 8, 9 and 10 are horizontal sections through storage battery elements embodying other modifications of my invention;

Figure 11 is a vertical side elevation of a portion of the element shown in Figure 10;

Figure 12 is an enlarged fragmentary view in side elevation of the storage battery element of Figs. 1 and 2; and

Figure 13 is a sectional view on line 13-13 of Figure 12.

Referring to the drawings, the grid consists of a plate 1 of thin sheet metal, such as nickel plated steel, stamped to form one or more pockets or openings 2 of rectangular form, the upper and lower edges of the same being formed with flanges 3 having integral tongues 4 situated in vertical alinement with each other and corresponding in number to the tubular pockets 5, which are mounted side by side with their ends clamped in position by the tongues 4, as clearly shown in Figs. 12 and 13 and as described in patent No. 896,812 heretofore mentioned. The pockets shown are formed of perforated metal, such as nickel-plated steel, and are filled with active material, which in the case of the Edison type of battery, consists of alternate layers of nickel hydrate and flake nickel tamped therein under pressure. The tubular pockets 5 preferably have seamless nickeled steel rings 6 mounted upon the same in staggered relation, as shown.

In order to prevent all liability or possibility of the bending or buckling of the tubes, I provide retaining means which may be of any of the following forms:-

In the construction shown in Figures 1, 2 and 3, continuous metallic strips 10, preferably of nickel-plated steel, are provided, extending transversely across the

pockets 5 and on opposite sides thereof, the strips being bent around one side edge of the grid 1. The tubular pockets 5 are held in place between the portions of strips 10 disposed on opposite sides thereof and are prevented from bending or buckling by these strips, and the usual insulating separating bars or rods disposed <sup>vertically</sup> between the negative and positive grids or plates of a battery, as disclosed, for example, in patent No. 1,012,828, granted on December 26, 1911 to Thomas A. Edison. A plurality of such strips may be provided, the said strips being suitably spaced apart. In Figure 1 I have shown an arrangement wherein three of such retaining strips are employed for the pockets 5 in each opening 2, while in Figure 2 but two of such strips are used for the pockets 5 in each opening 2. The retaining strips 10 may be secured in place in any suitable manner, as for example, by spot welding the ends of the same to one edge portion of the plate 1, and the portions thereof bent around the other edge portion of the plate to such portion, as is indicated at 12 and 13 in Figure 3, and are preferably secured in place so as to be under sufficient tension to oppose any tendency of the tubular pockets 5 to bend or buckle. Obviously, each of the strips 10 may be formed as a single piece or in two pieces, and may be secured in place in the manner disclosed in any of the modifications hereinafter described.

In the modification illustrated in Figures 4 and 5, two retaining strips 20 and 21 are threaded in and out at intervals between the pockets, as is indicated at 22 and 23 in Figure 4, and are secured in place by bending the ends thereof around the side edges of the grid 1 and forcing

them into clamping relation with the grid near its edges, as is shown at 24. Obviously, strips 20 and 21 may be formed integrally, bent around one side edge of the grid 1, and welded thereto as shown in Figure 3, or secured thereto in any other suitable manner. For example, the ends of strips 20 and 21 may be riveted to the grid 1, as shown at 25 in Figure 6.

In the modification illustrated in Figure 7, the retaining strip 50 is disposed on opposite sides of the pockets 5, being bent around the right hand edge of the grid 1 and riveted at its ends, as shown at 51, to the left hand edge portion of the grid. The strip 50 where it is bent around the right hand edge portion of the grid is forced into clamping relation therewith, as shown at 52. In Figure 7 the sections of strip 50 on opposite sides of pockets 5 and between the end pockets are each disposed in a single plane and are tangent to all the pockets.

In the modification illustrated in Figure 8, the retaining strip 60 is disposed on opposite sides of the pockets 5 and secured to the grid 1 in the manner described in connection with the modification illustrated in Figure 7. In this figure, however, the sections of the strip on opposite sides of the pockets 5 are indented or forced inwardly between adjacent pockets 5 at a plurality of points, whereby the strip is secured more firmly in place and a plurality of depressions 61 are formed.

In the modification illustrated in Figure 9, the retaining strip 30 is threaded in and out so as to pass between each two adjacent pockets, the ends of the strip being shown secured to the edge portions of the grid or

plate 1 in the manner hereinbefore described in connection with the modification illustrated in Figures 4 and 5. Obviously, they may be secured by welding or riveting, and pairs of strips formed either integrally or as separate pieces may be employed.

In the modification illustrated in Figures 10 and 11, the retaining strip 40 is provided with tongues 41 formed of material cut or pressed out partially from the material of the strip. Each of these tongues is bent around one or more of the tubular pockets, and the end of the tongue inserted between a pair of adjacent pockets. The ends of strip 40 are secured to the edge portions of the grid 1 in the manner hereinbefore described in connection with the modifications illustrated in Figures 4, 5 and 9, although it is obvious that they may be secured by welding or riveting. A plurality of strips, such as 40, may be employed, and they may be arranged alternately on either side of the tubular pockets 5.

Where the retaining strips are of considerable length, the modifications illustrated in Figures 4, 5, 6, 9, 10 and 11 inclusive are more advantageously employed, as in these constructions the strips are held more firmly in contact with the tubular pockets than in the construction illustrated in Figures 1, <sup>2</sup><sub>3</sub>, 7 and 8.

In the modifications shown in Figures 4, 8 and 9, the vertical insulating bars or rods employed between adjacent plates or grids of a battery and referred to above, may be more firmly held in place than in the modifications illustrated in Figures 3 and 7, as the same may be disposed in the depressions in the retaining strips formed by threading the same between adjacent pockets 5 as in Figures 4 and

9, or in the depressions 61 formed by forcing the strips inwardly between adjacent pockets, as in Figure 8.

In all of the modifications, a plurality of retaining strips spaced apart, as shown in Figures 1 and 2, may be employed. If desired, wires may be employed instead of the flat retaining strips illustrated and described herein. However, I consider the flat strips to be preferable.

Having now described my invention, what I claim as new therein and desire to protect by Letters Patent of the United States is as follows:-

1. In a storage battery, the combination of a supporting plate, a plurality of pockets supported thereby at their ends, and means co-operating with the pockets intermediate their ends to prevent bending or buckling thereof, substantially as described.

2. In a storage battery, the combination of a supporting plate, a plurality of pockets supported thereby at their ends, and a retaining strip co-operating with the pockets intermediate their ends to prevent bending or buckling thereof, substantially as described.

3. In a storage battery, the combination of a supporting plate, a plurality of pockets supported thereby at their ends, and retaining strips co-operating with the pockets intermediate their ends to prevent bending or buckling thereof, substantially as described.

4. In a storage battery, the combination of a supporting plate, a plurality of pockets supported thereby at their ends, and a retaining strip secured to the plate and co-operating with the pockets to prevent bending or buckling of the same, substantially as described.



5. In a storage battery, the combination of a supporting plate, a plurality of pockets supported thereby at their ends, and retaining strips secured to the plate and co-operating with the pockets to prevent bending or buckling of the same, substantially as described.

6. In a storage battery, the combination of a supporting plate, a plurality of pockets supported thereby at their ends, and a retaining strip secured at its end to the plate and co-operating with the pockets to prevent bending or buckling of the same, substantially as described.

7. In a storage battery, the combination of a supporting plate, a plurality of pockets supported thereby at their ends, and retaining strips secured at their ends to the plate and co-operating with the pockets to prevent bending or buckling of the same, substantially as described.

8. In a storage battery, the combination of a plate having a rectangular opening, a series of tubular pockets applied to said opening and secured to the plate at their ends, and a retaining strip secured at its ends to the plate and extending transversely across the pockets and in contact therewith, substantially as described.

9. In a storage battery, the combination of a plate having a rectangular opening, a series of tubular pockets applied to said opening and secured to the plate at their ends, and a plurality of retaining strips secured at their ends to the plate and extending transversely across the pockets and in contact therewith, substantially as described.

This specification signed and witnessed this 31<sup>st</sup> day of January 1914

*Miller Reese Hutchison*

Witnesseth:

1. *William A. Hardy*
2. *Mary J. Laidlaw*

## Oath.

State of New Jersey } ss.,  
County of Essex }

MILLER REESE HUTCHISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex County New Jersey

that he verily believes himself to be the original, first and sole inventor of the improvements in

### STORAGE BATTERIES

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

*Miller Reese Hutchison*  
Sworn to and subscribed before me this 31<sup>st</sup> day of January 1914

*Mary J. Laidlaw*  
Notary Public.  
NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

[Seal]

22.460

815,946

Fig. 2

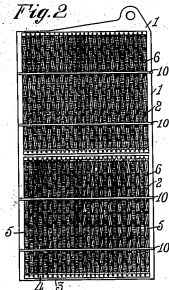


Fig. 1.

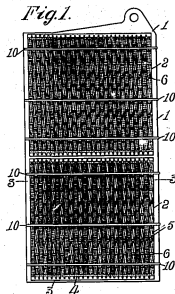


Fig. 12.

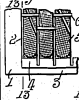


Fig. 7.



Fig. 8.



Fig. 4.



Fig. 9.

Fig. 13.



Fig. 10.



Fig. 11.



Fig. 5.

Inventor:

Witnesses: Fig. 5. Fig. 6. Miller, Ruen, Hutchison

By Brown 21 21 Byer & Holden

Harry L. Graham 24 24 his Atty.

Abandon  
704  
Dec 29, 1914

FEB 9 1914

Div. 3 Room 173

2-200

Paper No. 2

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

"The Commissioner of Patents,  
Washington, D. C.,"  
and not my office by name.

CLJ/RAJ

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

Mar. 7, 1914.

Dray and Holden.

Edison Office Bldg.,

Orange, N.J.



Please find below a communication from the EXAMINER in charge of the application of

M. R. Hutchinson, Storage Batteries.

815,946, filed Feb. 2, 1914.

Thomas Ewing  
Commissioner of Patents.

2-2011

The illustration in this case should include the vertical insulating bars and show their relation to the retaining strips, so as to avoid necessitating reference to another case for a disclosure of part of this structure. For example, the matter at the bottom of page 6 is not shown on the drawing.

Claim 1 is rejected on---

Usher, 480,886, Aug. 16, 1892, 204 - 29, 717.  
Schneider, 580,428, Apl. 13, 1897, 204 - 29, 727,  
Schneider, 602,172, Apl. 12, 1898, same class,  
Morrison, 976,092, Nov. 16, 1910, same class.  
Poppenburg, Reissue # 12,228, of 701,589, Jun. 7, 1904, 204 - 29 (746).

It should be noted that the separator 20 shown by Morrison, performs the function set forth in claim 1.

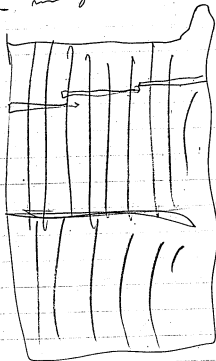
Claim 2 is rejected on Usher, Schneider, 580,428, or Poppenburg.

Claims 3 to 9, inclusive, are rejected on either of Usher, Schneider, 580,428 or Poppenburg, in view of the specific electrode structure shown by---

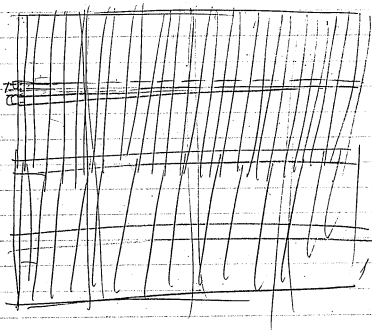
Edison, 896,812, Aug. 28, 1908, 204 - 29, 717.

Examiner, Division 3.

-22, 1911 - describe by Mr. Edwin  
me H<sub>2</sub> - reduction ~~applied~~ to position  
Means for securing  
tube in grid -



Several ways - meeting  
See Smith + Hutchinson p




111

∞

Revised  
7/24


2004/11

*[Signature]*



5. ~~\_\_\_\_\_~~ X

11/11/2019 11:11:11 AM



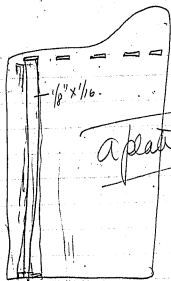
\_\_\_\_\_



Recd by 7th  
Mar 24 1911



3



apart



Ready 20h  
7/11/21/911  
Mason

Mr. Lawalwan:

I think it is a good plan to let my draftsman go over the drawing for this patent as the present one is incorrect in several particulars. I have had Norton on the job fastening plates up this way since the inception of the patent and he can show it up to better advantage.

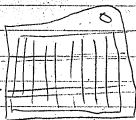
I think it is a wise plan also to include a new way we have of burning the ends of the strap to the grid by oxygen-acetylene flames. I will get him on the job at once.

MMH

3/10/12.

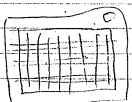
Mr Laukan

three on  
one page



2 strips  
replace  
rings

MRH



3 strips



Fig 3

Fig 5

Fig 7

Fig 8

Fig 9

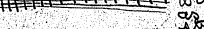
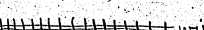
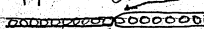
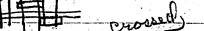
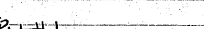
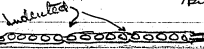
Fig 2

Fig 4 Fig 6

THESE  
on one  
page



B-2  
Top View 11  
7 lines in place



additions

Jan 15 1912

Note:

This drawing of the  
slaps on side of plate  
is not as complete nor  
correct as I want it.

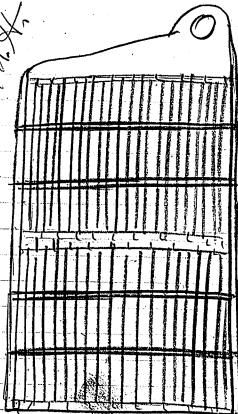
Think you had better  
make another one, showing  
the various methods of  
applying it.

Take two pages if you  
need it. You ought to be able  
to get one page full of plates,  
2 slaps + 3 slaps,  
and the other page with  
details of various ways of  
applying slaps.

There should also be a  
top view of a cell - B-2 -  
with small tubes, + the four  
insulators in, cell top removed.

We will let the Submarine cell  
and cover in separate patent.  
You patent in + Lewis will have  
it made in.

M.R.H.



Handwritten notes: "1/12/12" and "1/12/12" with a signature.



~~Handwritten scribble~~

Top view of B<sup>2</sup>  
with pins in place.

ooooo

Wires instead of  
slaps.

Submitted to  
~~Handwritten signature~~  
Apr 15 1912



Copy 3, 5, 7, 8, 9,  
2, 4, 6.



Submitted to  
~~Handwritten signature~~  
Apr 15 1912

The welded strip  
is preferable.

We welded at  
both ends "A" + "B"  
(See jig designated by  
me as #9-

The Spec runs  
pretty well.



Mr 2

OK better patent

These variations of  
methods of securing the  
metal strips across the  
plate to support  $1/8$ " tubes  
may come in handy  
if we ever have to  
use  $1/8$ " tubes again.

The Dwg & Specs  
were prepared almost 2  
years ago. I think  
we should  
file?

mmh

11/21/13

**Patent Series**

**Patent Application Files**

Folio # 961      Sound Records

Serial #:            816687

Primary Applicant: Edison, Thomas A

Date Executed:    2/3/1914

[PHOTOCOPY]

Patent No. 961

Serial No. 816687

Applicant.

Address.

Thomas A. Edison

Llewellyn Park  
West Orange, N. J.

Title Sound Record

Filed Feb. 5-1914

Examiner's Room No. \_\_\_\_\_

Assignee \_\_\_\_\_

Ass't Exec. \_\_\_\_\_

Recorded \_\_\_\_\_

Liber \_\_\_\_\_

Page \_\_\_\_\_

Patent No. 961 Issued March 17, 1915

ACTIONS.

- |    |          |               |    |
|----|----------|---------------|----|
| 1  | Rejected | March 12-1916 | 16 |
| 2  | Amended  | Feb. 12-1916  | 17 |
| 3  | Rejected | Feb. 27-1916  | 18 |
| 4  |          |               | 19 |
| 5  |          |               | 20 |
| 6  |          |               | 21 |
| 7  |          |               | 22 |
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| 12 |          |               | 27 |
| 13 |          |               | 28 |
| 14 |          |               | 29 |
| 15 |          |               | 30 |

DYER & HOLDEN,  
ORANGE, NEW JERSEY.

VAULT

# Petition.

To the Commissioner of Patents:

Your Petitioner **THOMAS A. EDISON**  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, Essex County, West Orange, New Jersey,

prays that letters patent may be granted to him for the improvements in

- SOUND RECORDS -

set forth in the annexed specification; and he hereby appoints Dyer & Holden, (Registration No. 3244), a firm composed of Frank L. Dyer and Delos Holden, whose address is Edison Office Building, Orange, New Jersey, his attorneys with full power of substitution and renocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

*Thos. A. Edison*

# S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented a certain new and useful improvement in SOUND RECORDS of which the following is a description:

My invention relates to sound records, and more particularly to sound records of the flat or disc type.

In the reproduction of sound records, a full appreciation of the reproduction is frequently not realized because of unfamiliarity on the part of the audience or listeners with the matter recorded on the record, its composer or author, and the artist by whom the record was made. This is especially true in the case of musical selections, particularly those taken from grand opera, the latter being unfamiliar to a large part of the public and being frequently recorded in a foreign language. It is the principal object of my invention to provide a convenient means whereby suitable information relating to the recorded selection may be imparted in an interesting and impressive manner to the audience or listeners for whom the record is to be played or reproduced. This information may comprise a brief description of the life and style of the author or composer, a statement of the story forming a basis of the recorded selection, a reference to the artist by whom the record is made, and, in fact, any matter which tends towards a better understanding and appreciation of the record.

In carrying out my invention, I preferably have the desired information recorded upon the rear face of a

so called "single face" disc record, that is, upon the face of the record opposite that containing the recorded selection to which the information in question relates, the record of this information being adapted to be audibly reproduced by the same phonograph or talking machine reproducer employed for the reproduction of the said recorded selection. The information may take the form of an explanatory spoken lecture recorded on the rear face of the record in the manner usual in making sound records. The recorded lecture may be delivered by a lecturer having a pleasing style of speech so that it will be reproduced from the record in a very pleasing manner. By means of this invention, I have found that information suitable for the preparation of the audience for a full enjoyment of the reproduction from the sound record may be imparted in an interesting and effective manner.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawing forming a part of this invention, and in which -

Fig. 1 is a rear view of a disc sound record embodying my invention; and

Fig. 2 is a cross sectional view of the same taken on line 2'-2 of Fig. 1.

In the drawing, the numeral 1 designates the sound record, the numeral 2 sound wave undulations corresponding to the selection to which the lecture relates, and the numeral 3 the sound wave undulations corresponding to the recorded lecture.

Considering more in detail a given example of the matter which may be included in the recorded lecture,

the selection recorded on the face of the record may, for example, be Siciliana (O Lola Fair as Flowers) - Cavalleria Rusticana. The recorded lecture in this case might comprise a brief statement of the life of Mascagni, the composer, showing the obstacles in the way of his early musical success, and how he suddenly achieved success through his masterpiece "Cavalleria". The lecture may then continue with the story of the melodrama upon which "Cavalleria" is based, continuing further with a description of the music - stating how it begins with the orchestral prelude sounding the note of tragedy, and how the orchestra becomes suddenly hushed for the song of the careless Turiddu, which is recorded on the record. The lecture may then refer to the artist by whom the operatic selection is sung and to his particular fitness for this work. Of course, the lecture may include any other suitable information.

While I have described in detail a record containing an operatic selection, I wish it to be understood that my invention is not limited to that kind of a record. The explanatory lecture may be employed in connection with a song of any kind and also in connection with any recitation or other spoken matter.

Having now described my invention, what I claim as new and desire to protect by Letters Patent of the United States is as follows:

1. As a new article of manufacture, a flat sound record having on both faces matter adapted for audible reproduction by a phonograph or talking machine, the matter on one face being explanatory of that on the other face, substantially as described.

2. As a new article of manufacture, a flat sound record having <sup>recorded</sup> sound waves or undulations on one face, and a statement explanatory of the matter to which said sound waves or undulations relate on the other face, substantially as described.

<sup>2</sup>3. As a new article of manufacture, a flat sound record having on both faces matter adapted for audible reproduction by a phonograph or talking machine, the matter on one face being the record of a musical rendition, and that on the other face the record of a spoken lecture explanatory of said rendition, substantially as described.

PB-KGX

Insert A to Claim 3 2/12/10.



This specification signed and witnessed this 3rd day of February 1914

Witnesseth:

Thos. A. Edison

1. Frederick Baughman
2. Mary J. Laidlaw

## Oath.

State of New Jersey } ss.,  
County of Essex }

THOMAS A. EDISON, the above named  
petitioner, being duly sworn, deposes and says that he is a citizen of the United  
States, and a resident of Llewellyn Park, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the  
improvements in SOUND RECORDS,

described and claimed in the annexed specification; that he does not know and  
does not believe that the same was ever known or used before his invention or  
discovery thereof; or patented or described in any printed publication in the  
United States of America or any foreign country before his invention or  
discovery thereof, or more than two years prior to this application; or patented  
in any country foreign to the United States on an application filed more than  
twelve months prior to this application; or in public use or on sale in the  
United States for more than two years prior to this application; and that no  
application for patent upon said invention has been filed by him or his legal  
representatives or assigns in any foreign country.

Thos. A. Edison  
Sworn to and subscribed before me this 3rd day of February 1914

(Seal)

Mary J. Laidlaw  
Notary Public,  
NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

8/6 600  
Sols 961

8/6 600

DIV 23.

64  
7

Fig. 1.

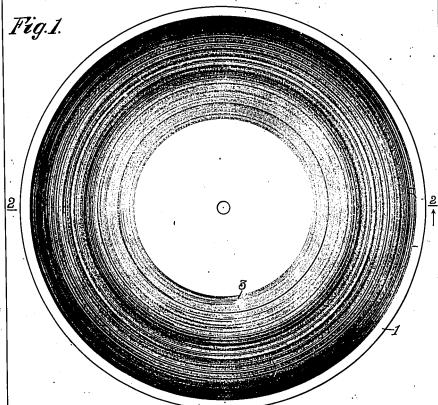
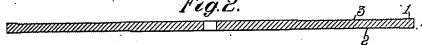


Fig. 2.



WITNESSES

J. H. Prophy  
G. W. B. B. B. B.

INVENTOR

Thomas A. Edison

Div. 22 Room 379

2-260

Paper No. 2

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not my official by name.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

LOS-8u

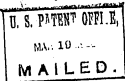
WASHINGTON

March 19, 1914.

Dyer and Holden,

Edison Office Building,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Sound Records, filed Feb. 5, 1914, Serial

No. 615,697.

*Thomas Ewing*  
Commissioner of Patents.

Claim 2, line 2, "sound waves" is objected to. Applicant  
apparently means the recorded sound waves.

All three of the claims are rejected on

Petit, 749,092, Jan. 5, 1904, (18-48.3).

What is the matter of the particular selection is held not of patent-  
able materiality. It would seem obvious that one is not entitled to  
a patent for alone substituting one record for another on a double  
faced tablet. Moreover, attention is directed to page 2, lines 131  
to 134 of said patent. Attention is also directed to  
Johnson, 739,518, Sept. 22, 1903, (181-17),  
as showing it to be old to place descriptive matter on the label, and  
to

Boursault, French patent; 350,343, (181-17), 1 sheet, Fig.  
5.

as showing it to be old to place such label on the rear face of the  
tablet.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, )  
SOUND RECORDS, )  
Filed February 5, 1914, ) Room No. 379  
Serial No. 816,687. )

HONORABLE COMMISSIONER OF PATENTS,

S I R:

In response to the Office action of  
March 19, 1914, please amend the above entitled case as  
follows:

Cancel claim 2 and change the numeral of  
claim 3 to 2.

Add the following claim as claim 3.

4  
3. As a new article of manufacture, a flat sound  
record having on both faces matter adapted for audible  
reproduction by a phonograph or talking machine, the  
matter on one face being the record of a musical rendition,  
and that on the other face the record of a spoken lecture  
containing a description of said musical rendition and  
a reference to the artist who rendered the same, sub-  
stantially as described.

REMARKS

The claims as now presented specify an article  
of manufacture not shown or described in any of the  
references. The said article has been put on the market  
by Thomas A. Edison, Incorporated and has been a decided  
success commercially. The patents to Johnson and  
Boursault do not describe a record containing explanatory

matter adapted for audible reproduction by a phonograph or talking machine. In the patent to Petit, the matter on one face is not explanatory of that on the other face of the record. Claim 2 specifies that the matter on one face is the record of a musical rendition and that on the other face the record of a spoken lecture explanatory of said rendition; and claim 3 specifies that the matter on said other face is the record of a spoken lecture containing a description of the musical rendition and a reference to the artist who rendered the same. There is no suggestion in any of the references of the record set forth in these claims.

In spite of its practical utility, applicant's invention is not disclosed in the prior art and reconsideration and allowance are accordingly respectfully requested.

Respectfully submitted,

THOMAS A. EDISON,

By Ryer & Holmes

his Attorneys.

Orange, New Jersey,

February 12, 1915.

FB-KGX

961 Div. 85 Room 379

2-260

Paper No. 4

Address only  
"The Commissioner of Patents,  
Washington, D. C."  
and not any official by name.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

ICE-Su

WASHINGTON

Feb. 27, 1915.

Dyer and Holden,

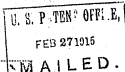
Edison Office Building,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Sound Records, filed Feb. 5, 1914, Serial

No. 816,687.



Thomas Ewing  
Commissioner of Patents.

2-261

In response to amendment of Feb. 13, 1915.

As no new question is raised by new claim 3 and as a clear  
issue is reached between applicant and this office, all of the claims  
are finally rejected on the references and for the reasons of record.

**Patent Series**

**Patent Application Files**

Folio # 965      Fuel Supplying Means for Internal Combustion Engine

Serial #:          819301

Primary Applicant: Edison, Thomas Alva, Jr

Date Executed: 2/11/1914

965

Folio No. 965Serial No. 819301

Applicant.

Address.

Thomas A. EdisonBurlingtonBurlington CountyNew JerseyTitle Fuel Supplying Means for Internal Combustion EnginesFiled February 18-1914

Examiner's Room No. \_\_\_\_\_

Assignee \_\_\_\_\_

Ass'g't Exec. \_\_\_\_\_

Recorded \_\_\_\_\_

Liber \_\_\_\_\_

Page \_\_\_\_\_

Patent No. Dropped

Issued \_\_\_\_\_

## ACTIONS.

- |    |                 |                   |    |                                     |
|----|-----------------|-------------------|----|-------------------------------------|
| 1  | <u>Rejected</u> | <u>May 8-1914</u> | 16 | <u>Dropped by action of</u>         |
| 2  |                 |                   | 17 | <u>Mr. T. A. Edison, Jr. - See</u>  |
| 3  |                 |                   | 18 | <u>his letter of April 22, 1915</u> |
| 4  |                 |                   | 19 | <u>HC</u>                           |
| 5  |                 |                   | 20 |                                     |
| 6  |                 |                   | 21 |                                     |
| 7  |                 |                   | 22 |                                     |
| 8  |                 |                   | 23 | <u>Jan 27</u>                       |
| 9  |                 |                   | 24 |                                     |
| 10 |                 |                   | 25 |                                     |
| 11 |                 |                   | 26 |                                     |
| 12 |                 |                   | 27 |                                     |
| 13 |                 |                   | 28 |                                     |
| 14 |                 |                   | 29 |                                     |
| 15 |                 |                   | 30 |                                     |

DYER & HOLDEN,  
ORANGE, NEW JERSEY.



# Petition.

---

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON, JR.  
a citizen of the United States, residing and having a Post Office address at  
Burlington, Burlington County, New Jersey

prays that letters patent may be granted to him for the improvements in

FUEL SUPPLYING MEANS FOR INTERNAL COMBUSTION ENGINES

set forth in the annexed specification; and he hereby appoints Dyer & Holden,  
(Registration No. 3244), a firm composed of Frank E. Dyer and Delos  
Holden, whose address is Edison Office Building, Orange, New Jersey, his  
attorneys with full power of substitution and renocation, to prosecute this  
application, to make alterations and amendments therein, to receive the patent,  
and to transact all business in the Patent Office connected therewith.

*Thomas A. Edison Jr*

# S P E C I F I C A T I O N

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, JR., a citizen of the United States and a resident of Burlington, in the County of Burlington and State of New Jersey, have invented a certain new and useful improvement in FUEL SUPPLYING MEANS FOR INTERNAL COMBUSTION ENGINES, of which the following is a description:-

My invention relates in general to means for supplying an initial or priming fuel charge to internal combustion engines and relates particularly to an attachment for this purpose adapted for installation in operative relation to the engines of motor vehicles. In starting internal combustion engines it is often difficult to provide an initial fuel charge properly vaporized to be exploded when the spark is passed. Accordingly, it is one of the objects of this invention to provide a conveniently controlled means for priming an internal combustion engine with a limited charge of vaporized fuel. My improved means may also be used for conveniently enriching the usual fuel charge during the running of the engine whenever desired, and for supplying additional air to the mixture. It is among the other objects of the invention to provide an attachment which will be auxiliary to the usual fuel feeding means, which may be readily installed and conveniently placed for observation and control by the operator.

Various other objects and advantages will be more fully set forth in the following description of my invention in which reference is had to the drawings accompanying and forming a part of this specification. In the drawings -

Figure 1 is a side elevation, partly in section, showing an internal combustion engine provided with priming means constituting one embodiment of my invention;

Figure 2 is an enlarged vertical longitudinal sectional view of the priming device shown in Fig. 1 with parts thereof in side elevation;

Figure 3 is a view similar to Fig. 1 showing the device attached directly to the fuel inlet manifold of the engine;

Figure 4 is a front elevation of a modified form of my improved priming device; and

Figure 5 is a side elevation, partly in section, of the priming device shown in Figure 4.

Referring particularly to Figs. 1 and 2, there is shown an internal combustion engine 1 having a carburetor 2 or other main fuel-supply means connected to the engine by the fuel inlet manifold 3, as is usual with motor vehicle engines now in use and herein shown diagrammatically and on a reduced scale.

Mounted upon a suitable support 4 which may be the dash board of the vehicle is the priming device or attachment 5, more particularly forming the subject matter of this invention, which vaporizer is attached by means of a conduit 6 to the fuel inlet manifold 3 of the engine 1.

The priming device 5 includes a vaporizing chamber 7 preferably including a cylinder 8, one end of which is open and the other end of which is reduced and closed except for the relatively small passage 9 extending therethrough at the upper portion thereof. The reduced end may be threaded through the support 4 or may be held thereto by means of the washers 10 and 11 threaded to the reduced portion and engaging opposite sides of the support. The open end of the cylinder 8 is closed by a cap 12 threaded thereto and coating with the hollow portion of the cylinder 8 to form the vaporizing chamber. The outer face of the cap is preferably provided with a glass front or closure 13 set into the cap and held thereto by the ring 14. The cylinder 8 is surrounded by a heating device 15, preferably electrical, consisting of a coil of wire 16 separated from the cylinder by a mica sleeve 17 and covered by a layer of asbestos 18 enclosed within a protecting layer of fibre 19. The heater 15 is included between insulating end plates 20 and 21, one of which plates 21 has a depending extension 22 carrying the binding posts 23 connecting the coil 16 with some suitable source of electric energy 24 (see Fig. 3), such as a storage battery, through a switch 25 placed convenient to the operator. A normally closed opening 26 to the chamber 7 provides an inlet for supplying the liquid fuel. A reservoir 27 having volume indicating graduation marks 28 thereon is in fluid communication with the opening 26, the flow of fuel from which reservoir is controlled by the cock 29 preferably disposed convenient to the operator. The conduit 6 is suitably attached to the cylinder 8, preferably so as to be readily dismounted therefrom.

and for this purpose is inserted in a coupling 30 screwed into the washer 11 and is passed through a gasket 31 held to the coupling by an end cap 32. In those cases where the reservoir 27 is omitted and the opening 26 closed by some suitable plug, the conduit 6 is preferably bent upward to form an open inverted U trap 33 extending at least as high as the opening 26 so that the liquid fuel will overflow out of the opening rather than into the intake manifold. Where the reservoir 27 is used the trap preferably extends as high as the level of the fuel in the reservoir, but when this reservoir has such capacity as to contain an amount of fuel just sufficient for one charge, this trap may be entirely omitted and any suitable form of conduit may be used to the manifold.

While the device has been described in position spaced from the engine cylinder so as to be convenient to the operator, it may be threaded directly into the manifold 3 or other suitable part of the cylinder as shown in Figure 3.

In operation, the cock 29 is opened to admit any desired amount of liquid fuel to the vaporizer, the level of which liquid may be observed through the glass 13, or the amount of liquid fed from the reservoir may be determined by the fall of level as indicated by the graduations 28. By closing the switch 25 the circuit is completed through the heater 15 and the liquid fuel in the chamber 7 is vaporized and the heated charge is passed to the engine cylinder in condition to be fired when the spark is passed. The firing of this charge is usually sufficient to start the engine in its usual cycle of operation which will then draw its fuel charge through the carburetor or other usual fuel supplying means.

During the running of the engine, should it be desired to temporarily enrich the normal charge fed to the engine cylinder, this device may be operated as in the priming operation hereinbefore described.

In the modification illustrated in Figures 4 and 5, the switch for closing the circuit from the battery 24 through the heating coil 16 is mounted directly on the depending extension 22 of the insulating end plate 21. The switch consists of a conducting member 40 pivotally mounted at one end and provided with a handle 41 at the other end. When the switch member 40 is swung on its pivot into circuit closing position, it contacts with the contact button 42 which is located at a higher level than the pivoted end of the member 40 and is electrically connected to one end of the coil 16. One of the binding posts 43 is connected electrically to the other end of the coil 16, and the other binding post 43 is connected to switch member 40. The battery or other source of current is connected across the binding posts 43. A stop 44 is provided to limit the upward movement of the switch member 40. When the member 40 is thrown out of circuit closing position, it tends to remain out of such position by gravity. In this modification the reservoir 27 having a stop cock is dispensed with and its place is taken by a plug 45 adapted to be threaded into the opening 26. The plug 45 has an opening 47 extending vertically therethrough, the opening being enlarged at the upper portion of the plug to constitute a reservoir 46. When the plug is inserted through the opening 26 as far as it will go, the opening 47 is closed by the bottom of the chamber 7, but by turning the plug so as to raise it slightly, com-

munication is established between the reservoir 46 and the chamber 7 through the opening 47 and liquid fuel may be introduced into the chamber 7. The plug is preferably provided with a milled peripheral portion to facilitate turning it. A spiral spring 49 surrounds a portion of the plug 45 and abuts one end against the upper portion of the exterior of the chamber 7 and the other end against a shoulder on the plug 45, thereby preventing the plug from being displaced accidentally or by jars arising from the movement of the vehicle.

My improved apparatus is also capable of use for supplying additional air to the fuel mixture when desired. This may be done when the reservoirs 27 and 46 are empty by simply opening the stop cock 29 or turning the plug 45 so as to raise it; or it may be done by removing the closure of the opening 26 entirely.

My improved priming device is supplemental to the usual fuel feeding device, is entirely independent of the usual functioning of the engine, and is well adapted to be constructed as an attachment for engines now in general use and to be installed convenient to the operator.

Having now described my invention, what I claim as new and desire to protect by Letters Patent is as follows:-

1. In an internal combustion engine, the combination with a cylinder having fuel feeding means associated therewith, of means independent of said fuel feeding means for supplying a priming charge of fuel to the cylinder, substantially as described.

2. In an internal combustion engine, the combination with the engine cylinder, and means for normally supplying fuel to said cylinder, of a vaporizer having a fluid connection with said means for supplying a charge of vaporized fuel to said means thereby to prime the cylinder, substantially as described.

3. In an internal combustion engine, the combination with a cylinder, a carburetor and a manifold intake connecting said cylinder and carburetor, of a fuel vaporizer and a fluid conduit connecting said vaporizer with said manifold intake, substantially as described.

*By enclosing  
heating means*

4. The combination of an internal combustion engine cylinder, means for supplying fuel thereto, a fuel vaporizer spaced from said engine and fuel supply means, and a conduit placing said vaporizer in fluid communication with said engine, substantially as described.

5. In an attachment for priming internal combustion engines, the combination with a vaporizing chamber having an opening through which fuel may be supplied to said chamber, of heating means for vaporizing the fuel in said chamber, and a conduit leading from said chamber and adapted to lead to the manifold inlet of the engine cylinder, substantially as described.

6. In an attachment for priming internal combustion engines, the combination with a vaporizing chamber and means for supplying fuel to said chamber, of heating means for vaporizing the fuel in said chamber, and a conduit leading from said chamber and adapted to lead to the manifold inlet of the engine cylinder, substantially as described.



7. In an attachment for internal combustion engine cylinders having a fuel supplying means, the combination of a vaporizing chamber, a fuel reservoir for said chamber, means for vaporizing the fuel in said chamber, and means for conveying the vaporized fuel from said chamber, substantially as described.

8. The combination with an engine cylinder having a complete fuel supplying means, of a support spaced therefrom, a fuel vaporizer carried by said support and a conduit connecting said vaporizer with said cylinder, substantially as described.

9. The combination with an engine cylinder having a fuel supplying means, of a support spaced therefrom, a fuel vaporizer carried by said support, and a fluid conduit between said vaporizer and said cylinder, and a reservoir for charging said vaporizer, substantially as described.

10. The combination with an engine cylinder, of a support spaced therefrom, a fuel vaporizer carried by said support, and a fluid conduit between said vaporizer and said cylinder, and a reservoir for charging said vaporizer, substantially as described.

11. In an attachment for internal combustion engines, the combination with a support, of a closed bottom vaporizing chamber carried by said support and having an outlet adjacent the top thereof, and vaporizing means operatively associated with the chamber, substantially as described.

12. In an attachment for internal combustion engines, the combination with a support, of a vaporizing chamber carried by said support and having an outlet spaced above the bottom thereof, vaporizing means operatively associated with the chamber, and a fuel reservoir for supplying said chamber, substantially as described.

13. In an attachment for internal combustion engines, the combination with a support, of a vaporizing chamber carried by said support and having an outlet spaced above the bottom thereof, and vaporizing means operatively associated with the chamber, said chamber having means for supplying fuel thereto, substantially as described.

14. A vaporizing attachment for priming internal combustion engines comprising a chamber having a liquid fuel inlet and a gaseous fuel outlet spaced from the bottom thereof, and heating means disposed about said chamber, substantially as described.

15. In an internal combustion engine, the combination with the engine cylinder, of a vaporizing device, a conduit connecting said device with said cylinder, said conduit including an open U trap, substantially as described.

16. In an internal combustion engine, the combination with the engine cylinder, of a vaporizing device, a conduit connecting said device with said cylinder, said conduit including means for preventing the overflow of liquid fuel from the vaporizing device into the engine cylinder, substantially as described.

17. In an attachment for priming internal combustion engines, the combination of a chamber having an inlet opening for the introduction of fuel and an outlet opening in the upper part thereof for the escape of vaporized fuel, and electrical heating means surrounding said chamber, substantially as described.

18. In an attachment for priming internal combustion engines, the combination of a chamber having an outlet in the upper part thereof for the escape of vaporized fuel, a reservoir disposed above said chamber and having a passageway leading into said chamber, means for controlling the flow of fuel from said reservoir to said chamber, and an electrical heater in thermal relation to said chamber, substantially as described.

HL-JS

This specification signed and witnessed this 11<sup>th</sup> day of February 1914

Witnesseth:

Thomas A. Edison, Jr.

1. Henry Kawabau
2. Harry J. Laidlaw

## Oath.

State of New Jersey } ss.,  
County of Essex

THOMAS A. EDISON, JR., the above named  
petitioner, being duly sworn, deposes and says that he is a citizen of the United  
States, and a resident of Burlington, Burlington County, New Jersey

that he verily believes himself to be the original, first and sole inventor of the  
improvements in

### FUEL SUPPLYING MEANS FOR INTERNAL COMBUSTION ENGINES

described and claimed in the annexed specification; that he does not know and  
does not believe that the same was ever known or used before his invention or  
discovery thereof; or patented or described in any printed publication in the  
United States of America or any foreign country before his invention or  
discovery thereof, or more than two years prior to this application; or patented  
in any country foreign to the United States on an application filed more than  
twelve months prior to this application; or in public use or on sale in the  
United States for more than two years prior to this application; and that no  
application for patent upon said invention has been filed by him or his legal  
representatives or assigns in any foreign country.

Thomas A. Edison, Jr.  
Sworn to and subscribed before me this 11<sup>th</sup> day of February 1914

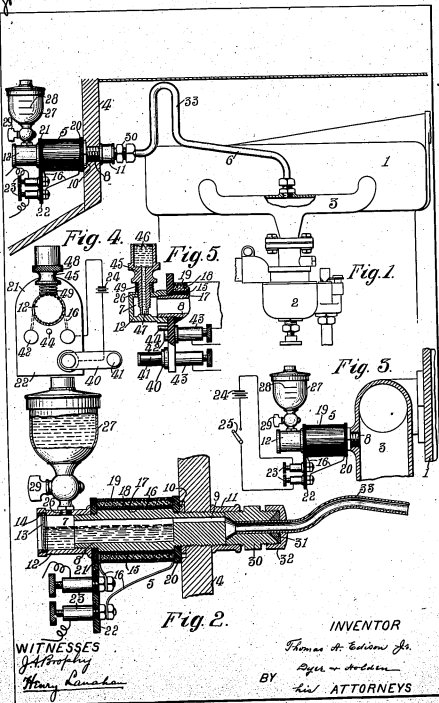
[Seal]

Harry J. Laidlaw  
Notary Public,  
NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917.

Pat. 965

123-150 819, 301

21  
83



Div. 28 Room 63

2-280

Paper No. 2

*Address only*  
"The Commissioner of Patents,  
Washington, D. C." and  
not any official by name.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

RYH

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

May 8, 1914

Dyer & Holden,

Edison Office Bldg., Orange,

N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Jr., 819,301, filed Feb. 18, 1914, Fuel Supplying  
Means for Internal Combustion Engines.

41-281

Thomas Ewing  
Commissioner of Patents

This case has been examined.

Claims 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17 and 18  
are rejected on

Low, et al., 868,608, Oct. 15, 1907 (123-180)

Claim 3 is rejected on

Wisner, 915,399, March 16, 1909 (123-180), or

Linsmeaver, 942,785, Dec. 7, 1909 (123-185).

Claims 15 and 16 are rejected on

McCarthy, 1,046,828, Dec. 10, 1912 (123-180).

LSP

Examiner.

The "Better Getter" Gasoline Economizer Company

Burlington, New Jersey

November 2<sup>nd</sup> - 1913

Dear Mr. Lamahan —

The enclosed sketch represents an "Easy Starting Carriage" which screws into the "Intake manifold" of a gasoline Engine —

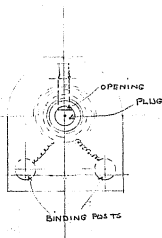
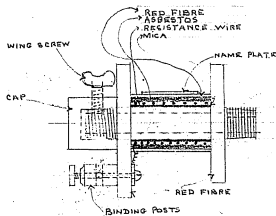
As I propose to immediately place this little device on the market for sale. I would respectfully ask you to make Patent application for this Carriage at once. — Thanking you for your kindness in this matter — I am

Yours faithfully  
Thomas A. Edison

Received letter and sketch  
from Mr. Lee Nov 3, 1913

HL

Invention of Thos A Edison for - Starting Cartridge.  
 Received from Mr. Hill - Nov 3, 1913. HC



Thomas A. Edison



Folio \_\_\_\_\_

STATEMENT OF INVENTOR

Invention Priming Cartridge for Gas Engines  
 Conceived on Oct. 2/13 Made sketches on Oct. 24/13  
 Disclosed to Gail Date 7/3/13  
 " J. A. Brophy " 11/1/13  
 Made drawing Nov. 13/13 Finished on Nov. 14/13  
 Model or complete working device started Oct. 26/13  
 Finished on Oct. 29/13  
 Is the invention in use? Yes

General Description of  
Invention.

Device consists of an electrically heated priming cartridge for supplying heated vapors for starting a gas engine and comprises a reservoir having a small outlet to a feed pipe connectable to the manifold pipe, the bottom of said feed pipe being bent upward adjacent the cartridge to prevent a possible overflow when filling the reservoir. Reservoir is enclosed post with a layer of mica, then an electric heating coil next an asbestos covering all being encased in a fibre covering. A supply cup may be secured into the end of cartridge.

Received by J. A. Brophy Date Nov. 11/13  
 Inventor Thomas A. Edison Jr.  
 Remarks \_\_\_\_\_

Note: This statement, together with sketch, to be put in the application file.

Edison, T.A. Jr.	
Starting Cartridge	
Submitted to Mr. Edison Sr. Nov 8, 1913 who	
advised filing an application. Handled	
to H. A. Brophy Nov 11/13.	HE
Mr. Edison says file	

F-965

April 17, 1915.

Mr. Thomas A. Edison, Jr.,  
Burlington, New Jersey.

Dear Mr. Edison:

Re Application Serial No. 819,301, filed Feb. 18, 1914  
Folio 965.

I have just taken up the above application for amendment. This application is on the priming device for starting internal combustion engines, and an electrical heating coil is provided for vaporizing the priming charge.

No claims have been allowed and among the patents cited against the application is the patent to Low and Wassman, No. 868,608, October 15, 1907, a copy of which is enclosed herewith. This patent seems to be a close reference for your invention. Will you kindly look over it and let me have your suggestions on the question of amendment. If you think the application should be prosecuted further, it will assist me materially if you will point out the advantages of your apparatus over that shown in this patent and also the structural differences which produce these advantages. We shall have to decide promptly what we are to do in this application inasmuch as an amendment must be prepared and placed on file in the Patent Office prior to May 8th and we do not like to run too close to the time limit in these matters.

Yours very truly,

HL/JU

1965

E

Burlington - N. J.  
April 22<sup>nd</sup> 1912.

Dear Mr. Hancham -

Upon my return home  
I found your letters and papers regarding  
Patent applications - I have carefully  
gone over the amendments suggested and  
fully approve of them all - If they  
allow claim # 19 - it will help me out  
beautifully - for it is just exactly what  
I want - Would like to retain this  
copy - But if you need it let me know  
and I will forward same immediately.

I hardly consider it worth while to  
go any further with that "Starting Garbage"  
application - it seems to me that the  
idea is very fully patented by how x  
Wassermann -

With very kind regards - I am  
very faithfully  
Thomas A. Edison

**Patent Series**

**Patent Application Files**

Folio # 971      Phonographic Molding Apparatus

U.S. Patent #:    1162800

Primary Applicant: Nehr, William F

Date Executed:    2/20/1914

Medcom <sup>Dutch -</sup> OK patent  
us -

This is up for  
application for patent.

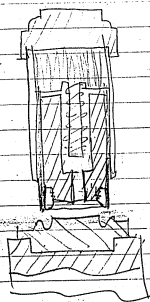
It is ~~the~~ <sup>stunt</sup>  
worked out by ~~Neder~~ <sup>Neder</sup> and  
Wendert recently.

So you want to  
have some applied  
for in USA.

MAH

10/10/13

Duplex  
for school  
with 2006  
space  
MAH



Device for forming both end flanges  
in one operation.

The improvement consists in forming both end flanges 1 + 2 of a record cylinder in one operation. It being done formerly in two operations.

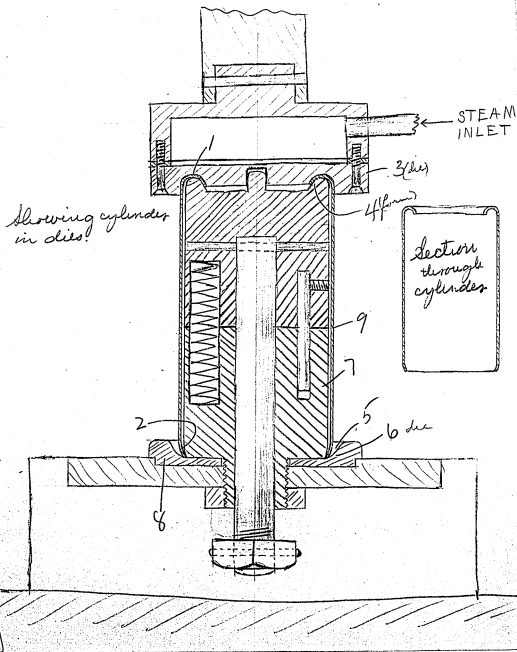
The flange 1 is shaped as formerly by a steam heated die 3 being forced downwardly by power over a form 4.

The flange 2 is formed by the celluloid cylinder being forced into the groove 5 forming the lower die 6 this die 6 being formed by the two parts 7 + 8. The flaring face of part 8 forces the end of celluloid cylinder 9 against the slightly tapered end of die member 7. This action of forcing cylinder 9 into die 6 causes a contraction of the end of cylinder 9 thus forming a lock which when the cylinder is put into printing or moulding machine forms an air tight joint & prevents the escape of steam.

19/  
10/  
11.3



Rec'd by J.T.B. 1/10/13



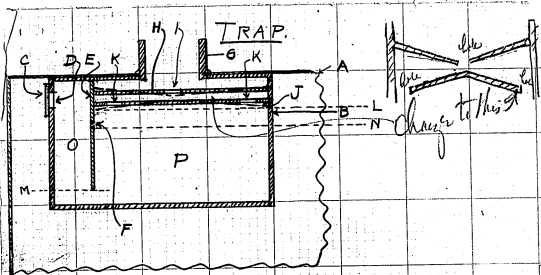
**Patent Series**  
**Patent Application Files**

Folio # 975      Safety Device

U.S. Patent #: 1130977

Primary Applicant: Hutchison, Miller Reese

Date Executed: 3/26/1914



I have previously applied for patents on devices to prevent explosion of gases within a sealed vessel, such as the containing can of an Edison Cell, from escaping therefrom. Also to prevent explosion of gas outside from communicating with the interior of the cell. These various devices consist of a vessel of water or other liquid, with the inlet pipe from the cell placed with open end below the water, so that the gases escaping must necessarily pass through this water.

I have found by experiment that several things happen in such apparatus operation that were not anticipated.

For instance, when a cell overcharges at a high rate, a foam forms on top of the electrolyte and passes such an intense as to flow out of such a hole as may be put through the top.

Therefore these bubbles pass through the outlet such as I have previously provided and even form a direct path of flame communication from the

Resley  
Jan 19 11

(10)  
11-11

M. J. Sweetman  
Dec 10, 1911

inside to the outside or vice versa, this caused no much  
amalgamation until the cause was discovered.  
They placed a piece of fine mesh gauze of steel "C"  
over the hole "D" of ~~the~~ Side B.  
The bubbles, in trying to pass through the gauze,  
are caught.

The conclusion of Fig. is apparent. "A" is the top of  
containing can, B is the water trap container, secured  
tightly to "A" and having outlet  
E in partition above ~~exit~~ to bottom of B, and  
dividing the vessel of into two communicating  
compartments "O" and "P". Here I am, two ~~upper~~  
plates having non registering holes "J" and "K-K"  
respectively.

Gas passing from interior of A, through gauze C  
hole D, forces the water in compartment "O" down to  
level "M", when the gas bubbles through the water  
in compartment "P"; through the holes in baffles plates  
and out.

Another feature came up in experiment. When  
a cell is overcharged, ~~over~~ charged, or discharged, heat  
is generated within the cell, when left standing,  
the cell cools down and the water in ~~reservoir~~  
B is drawn into the cell through hole "D", by  
the resultant partial vacuum in cell from  
cooling.

So I have placed a very small hole "F" in  
partition E. When the cell is gassing, the level  
of the water in compartment P is above F. Hence  
no expansion passes through F is for air from  
cell is sealed. F is still closed. As cell  
cools down, water rises in "O", and falls in "P".  
This succors F and air passes into the cell to  
relieve the vacuum. The cooling process is  
slow hence only a small hole at F is necessary.

-3-

So, instead of the safeguard being removed when needed,  
non-<sup>when you call</sup> So standard - it is not affected,  
<sup>when the call does explode</sup> there is a tendency  
to left some of the water out in the trap. So I have  
placed the buffer plates with non-registering  
mass, which effectively prevents this.  
I think the best way to incorporate these features  
in their separate patents.

Witness

W. A. Swickman  
Orange  
Dec 10/17

Gas Trap

Madison says  
go ahead and give

me

1/3/12

Specifications  
attached.



**Patent Series**  
**Patent Application Files**

Folio # 981      Sound-Modifying Device

U.S. Patent #: 1201449

Primary Applicant: Edison, Thomas A

Date Executed: 4/21/1914

I quote <sup>Arthur</sup> ~~Wills~~ legal  
 Dept 3 yrs ago  
 understand its filed  
 Mr Hutchison: <sup>2/6/14</sup> <sup>Wills</sup> <sup>from your</sup> <sup>that</sup> <sup>patented</sup> <sup>first</sup>

Mr Edison has invented  
 a device for controlling the volume  
 of sound in a disc phonos. and  
 I believe is going to have it used  
 on all disc machines.

The device consists of a mechan-  
 ically operated ball which may be  
 moved to or from the controlled  
 throat opening of the horn, allowing  
 a greater or less volume of sound  
 to escape.

This should be protected if  
 we are going to use it.

With Mr Edison's O.K. I will  
 draw it up.

J. A. Brophy  
 7/14 Legal Dept are busy on this Mr Ed.  
 called their attention to it this A.M.  
 Brophy

2/29/14

Mr Hutchison:

As to patent situation  
 on Sound Controller for phonos.  
 Mr Hardy does not think our  
 original patent will cover  
 this new form.

Mr Edison told Mr Hardy  
 to wait until committee passed  
 on device. Now that it is  
 accepted it might be well  
 to mention the matter again.

J. A. Brophy

Mr Sapp  
 patented  
 but it was drawn by  
 J. A. Brophy



**Patent Series**

**Patent Application Files**

Folio #	983	Method and Apparatus for the Production of Molded Articles
Serial #:	836608	
Primary Applicant:	Edison, Thomas A	
Date Executed:	4/28/1914	

Folio No. 983

Serial No. 836608

Applicant.

Address.

Thomas A. Edison Llewellyn Park,  
West Orange, N.J.

Title Method and Apparatus for the Production  
of Molded Articles

Filed May 6 - 1914 Examiner's Room No. \_\_\_\_\_

Assignee New Jersey Patent Co.

Ass'g't Exec'd July 10, 1915 Recorded July 13, 1915 Liber E, 98 Page 29

Patent No. Abandoned Issued \_\_\_\_\_

ACTIONS.

- |    |                                 |    |       |
|----|---------------------------------|----|-------|
| 1  | <u>Registered July 7 - 1914</u> | 16 | _____ |
| 2  | <u>Amended June 9, 1915</u>     | 17 | _____ |
| 3  | <u>Allowed June 24, 1915</u>    | 18 | _____ |
| 4  | <u>77 due Dec 22, 1915</u>      | 19 | _____ |
| 5  | _____                           | 20 | _____ |
| 6  | _____                           | 21 | _____ |
| 7  | _____                           | 22 | _____ |
| 8  | _____                           | 23 | _____ |
| 9  | _____                           | 24 | _____ |
| 10 | _____                           | 25 | _____ |
| 11 | _____                           | 26 | _____ |
| 12 | _____                           | 27 | _____ |
| 13 | _____                           | 28 | _____ |
| 14 | _____                           | 29 | _____ |
| 15 | _____                           | 30 | _____ |

VAULT

Forfeited  
See Mr. Edison's  
memo inside  
Abandoned 6/15  
Entirely  
100

4-17

DYER & HOLDEN,  
ORANGE, NEW JERSEY.

# Petition.

---

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON,  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

METHOD AND APPARATUS FOR THE PRODUCTION OF MOLDED ARTICLES.

set forth in the annexed specification; and he hereby appoints Dyer & Holden,  
(Registration No. 3244), a firm composed of Frank E. Dyer and Delos  
Holden, whose address is Edison Office Building, Orange, New Jersey, his  
attorneys with full power of substitution and renocation, to prosecute this  
application, to make alterations and amendments therein, to receive the patent,  
and to transact all business in the Patent Office connected therewith.

*Thos. A. Edison*

# S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, County of Essex, and State of New Jersey, have invented certain new and useful improvements in METHOD AND APPARATUS FOR THE PRODUCTION OF MOLDED ARTICLES, of which the following is a description:

My invention relates to methods and apparatus for the production of molded articles, such, for example, as sound record discs or tablets. Such discs or tablets are now made by compressing the material to be molded, commonly called "stock", in a mold with the application of heat. As the tablets thus formed are subject to very high pressure during the imprinting of the sound record impression, it is necessary in order to get an even impression that the tablets be free from marked irregularities in density or, in other words, that the same be free from the so-called "hard spots" and "soft spots" which cause an unevenness of pressure on the tablets. The principal object of my invention is to provide an improved method and apparatus whereby an article, such as a sound record disc, may be readily formed free from objectionable irregularities in density. Another object of my invention is to so form the said tablet or article that the same is capable of receiving an accurate sound record impression and of being molded without objectionable distortion or change of shape. Other objects of my invention will appear more fully in the following specification and appended claims:

In order that my invention may be more clearly

understood, attention is hereby directed to the accompanying drawings forming a part of this specification and in which -

Fig. 1 is a perspective view of one form of my improved apparatus;

Fig. 2 is a vertical sectional view of the same;

Fig. 3 is a view partly in plan and partly in section taken on the line 3 - 3 of Fig. 2; and

Figs. 4 and 5 are views partly in elevation and partly in section of details of construction;

Fig. 6 is a perspective view of a detail of construction;

Fig. 7 is a view partly in elevation and partly in section of a part of the device shown in Fig. 6;

Fig. 8 is a view partly in plan and partly in section of the device shown in Fig. 7; and

Fig. 9 is a fragmentary sectional view showing the distribution of the material in the mold prior to the compression of the same into a coherent tablet.

In all the views like parts are designated by the same reference numerals.

Referring to the drawings, my improved apparatus comprises a base 1 on which is mounted a U-shaped standard 2, one arm of which is secured to the base 1, the other arm of the standard extending in a substantially horizontal direction over the said base. The lower arm of the standard 2 has a vertical bore 3 in which there fits a tubular part 4 integral with and extending downwardly from the horizontal table or support 5. The part 4 and the table 5 are held against rotation with respect to the standard 2, as by means of the set screw 6 threaded into the standard and engaging the part 4. Two spaced lugs 7 and 8 are secured to the table 5 at the rear thereof,

these lugs serving to facilitate the positioning of the mold section 9 upon the table 5, <sup>by</sup> acting as stops when the said member is slid rearwardly upon the said table. The mold section 9, as shown, comprises a ring 10 having at the bottom thereof a flange 11 on which is supported the flat bottom plate 12. The latter is provided with a central pin 13 which serves to form in the molded disc the central aperture by which the sound record is adapted to be centered on the talking machine turntable. A funnel shaped container <sup>14-15</sup> 14 is supported upon the top of the ring 10, this container having a flange 15 extending around the outer surface of the ring 10 to prevent the spilling of the material to be molded while the same is being compacted and distributed in the mold section 9 the said material being commonly in powdered form. A table 16 is secured to the bed plate 1 and arranged in front of the table 5. The table 16 abuts against the forward portion of the table 5, the upper surfaces of these two tables being flush with each other. A pair of studs or pins 17, 18, pass slidably through apertures in the table 16, these two studs or pins being connected by bridge member 19 located below the table 16. Coil springs 20 and 21 arranged between the table <sup>16</sup> and the bridge member 19 and surrounding respectively the pins or studs 17 and 18 normally tend to hold the latter in depressed or lowered position. The bridge member 19 rests upon the rear end of a rod 22 rotatably mounted in bearings in the table 16, the said end of the rod 22 being provided with an offset portion 23 which is adapted to cam the said member and the pins 17 and 18 upwardly against the action of springs 20 and 21 when the rod 22 is rotated into the position shown in Fig. 5. As shown in the said Figure, a pin or pro-

section 24 on the bridge member 19 limits the rotation of the part 23 and the rod 22 in an anti-clockwise direction when the offset portion 23 has reached a vertical position. When the rod 22 is turned in a clockwise direction, referring to Fig. 5, the springs 20 and 21 force the studs or pins 17 and 18 below the upper surface of the table 16. A crank arm or lever 25 is secured to the forward end of the rod 22 to facilitate the manual rotation thereof. The studs or pins 17, 18 are arranged in such position as to engage the periphery of the mold member 9 when they are in raised position and the mold member is in proper position on the table 5. By the combined action of the studs or pins 17 and 18 and the projections 7 and 8, the mold member may accordingly be very effectively held against lateral movement on the table 5. When it is desired to slide the mold member from the table 16 onto the table 5 or vice versa, the studs or pins 17 and 18 may be readily caused to move downwardly below the upper surface of the table 16 by rotating the crank 25 in the proper direction.

The powdered stock having been placed in the mold, it is desirable that the same should be caused to settle in the mold uniformly. To obtain this effect, I employ a number of hammers 26 arranged around the mold and adapted to strike the same to agitate the powder and cause the same to settle. In the device shown in the drawings, four hammers are employed. The construction of all of the hammers is identical, one of the hammers being shown in detail in Fig. 6. Referring to this Figure, the mounting for each hammer comprises a bracket 27 secured to the bed plate 1 as shown in Fig. 1. The bracket has

pivoted thereto, as shown at 28, a U-shaped support 29 which carries the hammer 26 at its upper end. The hammer 26 is connected to the support 29 by means of a leaf spring 30, the lower end of which is arranged in a vertical slot 31 in the top of the member 29, a pivot screw 32 serving to connect the lower end of the spring 30 to the support 29. The slot 31 permits the hammer 26 and spring 30 to be swung about the pivot 32 to a horizontal position below the upper surface of the table 5 so that the mold section 9 may be slid from the table 5 to the table 16 or vice versa. (See dotted lines in Fig. 8.) A pin 33 secured in each member 29 extends across the slot 31 and limits the movement of the spring 30 in a given direction beyond vertical position. A thumb screw 34 mounted in the member 29 is adapted to engage the spring 30 to hold the latter and the hammer 26 in raised position. The hammers 26 are actuated by a rotating cam 35 which engages a hardened steel-bearing plate 36 secured to the upper arm of each of the U-shaped supports 29. Springs 37 and 38 secured at their upper ends to horizontal arms 39 and 40 on the bracket 27 and at their lower ends to bearings or studs 41 and 42 arranged on opposite sides of the support 29 serve to hold the plate 36 in engagement with the cam 35. The arms 39 and 40 extend on opposite sides of the support 29 and have their forward ends connected by a plate 43, a recess 44 being thus formed in the bracket 27 in which the support 29 moves. The cam 35 has secured to the under surface thereof a gear 45, the said cam and gear being provided with a common bushing 46 surrounding the tubular member 4. The bushing 46 and gear 45 rest upon a bearing 47 of anti-frictional material supported around the bore 3 on



the lower arm of the standard 2. The gear 45 meshes with a gear or pinion 46 secured to a shaft 47 and resting upon an offset bearing 48 for the shaft 47. This bearing extends from and is formed integrally with the standard 2. The lower end of the shaft 47 has secured thereto a pulley wheel 49 driven by a belt 50 by which power is transmitted from any suitable source. The belt 50 passes over idler pulleys 51 and 52 mounted on a shaft 53 which is supported by the standard 2. The cam 35 is so shaped and the hammers 26 are so arranged that the hammers are operated at different times in such order that the mold after being struck by a given hammer is next struck by the hammer diametrically opposite the same, after which, a third hammer and then the hammer diametrically opposite the third hammer strike the mold. In other words, the hammers are arranged in pairs, the two hammers of each pair striking the mold successively or before the next pair of hammers do so. The advantage of this order is that after the powder in the mold has been thrown in one direction by the first hammer of a given pair, the second hammer of the same pair tends to throw the powder back again thus causing the powder to settle uniformly in the mold. Referring to Fig. 3, the cam is intended to rotate in a clock-wise direction and is provided with shoulders 35' and 35'' over which the bearing piece<sup>36</sup> slip to permit the springs 37 and 38 to force the hammers 26 against the mold. As shown in the said Figure, the upper right hand hammer is the last one which has struck the mold. It did this when its bearing piece 36 slipped over the shoulder 35'. The bearing piece 36 for the lower left hand hammer, as shown, is about ready to slip over the shoulder 35'' so that the said hammer will be the next to strike the mold. Upon further rotation of the cam 35, it will be seen that

first the lower right hand hammer and then the upper left hand hammer will be caused to strike the mold. Although only two pairs of hammers are shown in the drawings, any desired number of pairs may be employed by properly shaping the cam 35.

The upper arm of the U-shaped standard 2 is bored out, as shown at 54, in alignment with the bore 3 so as to act as a guide for a hollow tubular shaft 55. In order to facilitate movement of the shaft 55 in the bore 54, the rear of said shaft is formed with a rack 56 meshing with a pinion<sup>57</sup> secured to shaft 58. The latter is rotatably mounted in standard 2 and has secured thereto a hand wheel 59 to facilitate the rotation thereof. A collar 60 secured to the shaft 55, as by a set screw 61 is arranged to engage the upper surface of the standard 2 to limit the downward movement of the shaft 55. The shaft 55 is prevented from rotating in the bore 54 by means of a pin 62 secured to the standard 2 and projecting into a slot 62' in the shaft 55. Extending through the shaft 55 and mounted in suitable bearings 63, 64 and 65 of anti-friction material is a shaft 66 having secured at its upper end a bevel gear 67 which meshes with a second bevel gear 68. The last named gear is secured to a horizontal shaft 69 which is mounted in a bracket 70 secured, as by a set screw 71 to the top of shaft 55. The shaft 69 has secured thereto a pulley 72 which is driven by a belt 73 which receives its power from any suitable source. To permit the necessary vertical movement of pulley 72, the belt 73 should be provided with a suitable movable belt tightening device (not shown.) The lower end of the shaft 66 carries a spider which comprises a central hub 74 secured to the shaft 66, as by a set screw 75, and a pair of blades or vanes or scrapers 76 and 77 carried by hub 74 and arranged

radially with respect to shaft 66 and at right angles to each other. The vanes, as shown in Fig. 2, have a width substantially equal to the internal diameter of the mold 9, and their lower edges are formed with concave portions 78 extending from a point near the center of the spider to a point a short distance from the outer edge thereof. Adjacent the outer edges of the vanes, the lower surfaces thereof are curved upwardly to a slight extent, as shown at 79. The purpose of the above described shape of the lower edge of the vanes 76 and 77 will be hereinafter described. A counterweight 80 connected to shaft 55, as by a chain 81 passing over idle pulleys 82 and 83, serves to counterbalance the weight of the said shaft and the parts carried thereby.

In the operation of the above described apparatus and in carrying on my improved process, a measured quantity of the stock or material to be molded is placed in the mold 9 after the latter has been properly positioned on the table 5 with its periphery engaged by the projections 7 and 8 and the pins or studs 17 and 18. The shaft 55 is then lowered by the hand wheel 59 until the collar 60 engages the top of the standard 2, vanes or scrapers 76 and 77 being thereby brought into operative position with respect to the material in the mold. Power being now applied to the belt 73, the pulley 72, gears 68 and 67, together with the shaft 66 and the vanes 76 and 77 carried by said shaft will be set into rotation. The vanes or scrapers 76 and 77 will now tend to distribute the material in the mold and to form the upper surface thereof. At the same time, power is applied through the belt 50 to rotate the cam 35 and cause the hammers 26 to strike the mold and agitate the powdered material therein to cause the same to settle uniformly. If the proper amount of stock has been placed in the mold, it will be compacted by the hammers 26 to the desired uniform density and will be so

distributed by the vanes or scrapers 76 and 77 that the upper surface thereof is smooth and has the desired shape without any surplus material being left. The time to accomplish this result depends upon the desired density of the material in the mold. The arm 25 may now be actuated to lower the pins 17 and 18, and after the shaft 55 and the vanes carried thereby are elevated, the mold may be slipped forward on the table 16.

It is next necessary to compress the material in the mold so as to cause the same to form a coherent mass and to give the desired shape to the article. To do this, the member 14 is removed and a suitable top mold member fitting for up and down movement in the top of the ring 9 is placed upon the material in the mold, and the completed mold with the material to be molded is transferred to a suitable press. Here, with the application of heat and pressure, the material in the mold is formed into an article having the desired shape. The article may then be cooled and removed from the mold.

With the vanes or scrapers 76 and 77 shaped as hereinbefore described, the material in the mold will assume the shape shown in Fig. 9 with an annular crown between the center and periphery of the upper surface and with a ridge adjacent the periphery of said surface. When the stock is in this form and the same is compressed between plane upper and lower mold plates arranged parallel to each other, a tablet is formed which is of uniform thickness but has a slightly greater density at the periphery and at the portion over which the sound waves of the usual sound record are impressed than at its other parts. By reason of this increased density at the portion of the tablet intended to receive the sound wave impression,

a more accurate and durable sound wave impression is obtainable. By reason of the increased density at the periphery of the tablet, the tendency of this part of the tablet to become rounded off or distorted in the subsequent molding of the tablet is eliminated. It has also been found where the stock in the mold is formed with a perfectly plane upper surface prior to being compressed into a tablet, that the tablet has a slightly concave or dished upper surface. This objection is eliminated by convexing the stock in the mold as is done by my invention prior to the compression thereof.

The material to be molded may be any suitable material for this purpose. It may, for example, be a mixture of wood pulp or other filling agent, and a fusible phenolic condensation product, such as the wellknown shellac substitutes and other substances which are referred to by the term "phenol resin" in U. S. patent to Jonas W. Aylsworth, No. 1,020,594, dated May 19, 1912, and entitled "Elastic Phenolic Condensation Product and Process of Forming the Same."

If desired, surface coatings of suitable material may be applied to the opposite faces of the tablet to receive the record impression.

Numerous changes may be made in the method and apparatus as described above without departing from the spirit of my invention, the latter being limited only as defined by the terms of the appended claims.

Having now described my invention what I claim as new and desire to protect by Letters Patent of the United States is as follows:

Cl. 1.123 rewritten - Mark A - 6-9-15

1. In apparatus of the class described, the combination of a mold and means coacting with the mold for compacting in the mold the material to be molded, substantially as described.

2. In apparatus of the class described, the combination of a mold and a hammer arranged to strike the mold, substantially as described.

3. In apparatus of the class described, the combination of a mold and a plurality of hammers arranged around and adapted to strike the mold, substantially as described.

4. In apparatus of the class described, the combination of a mold, a pair of hammers arranged on opposite sides of the mold, and means for actuating the hammers to cause the same to strike the mold at different times, substantially as described.

5. In apparatus of the class described, the combination of a mold, a plurality of pairs of hammers arranged around said mold, the hammers of each pair being arranged opposite each other, and means for actuating said hammers to cause each pair of hammers to strike the mold in succession, substantially as described.

6. In apparatus of the class described, the combination of a mold and the means for distributing in said mold material to be molded and for forming a crown on the upper surface of said material, substantially as described.

7. In apparatus of the class described, the combination of a mold and means for forming a crown on the upper surface of the material in the mold, substantially as described.

8. In apparatus of the class described, the combination of a mold and means for forming a ridge adjacent the periphery of the material in the mold, substantially as described.

9. In apparatus of the class described, the combination of a mold and means for forming a crown on the upper face and a ridge adjacent the periphery of the material in the mold, substantially as described.

10. In apparatus of the class described, the combination of a mold and the means for distributing material in said mold and for forming a crown on the upper surface and a ridge adjacent the periphery of the material in the mold, substantially as described.

11. In apparatus of the class described, the combination of a mold and means for distributing material in said mold and forming a ridge adjacent the periphery of said material, substantially as described.

12. In apparatus of the class described, the combination of a mold and a movable vane for distributing material in said mold, substantially as described.

13. In apparatus of the class described, the combination of a mold and a movable vane for distributing material in said mold and forming the upper surface of said material, substantially as described.

14. In apparatus of the class described, the combination of a mold, a rotatable vane for distributing material in said mold and forming the upper surface of said material, and means for rotating said vane, substantially as described.

15. In apparatus of the class described, the combination of a mold, means coating with the mold for compacting therein the material to be molded, and means for distributing the material in the mold, substantially as described.

<sup>12</sup>  
16. In apparatus of the class described, the combination of a mold, means coating with the mold for compacting therein the material to be molded, and means for forming the upper surface of the material in the mold, substantially as described.

<sup>13</sup>  
17. In apparatus of the class described, the combination of a mold, means coating with the mold for compacting therein the material to be molded, and means for distributing the material in the mold and forming the upper surface thereof, substantially as described.

<sup>14</sup>  
18. The method of molding which comprises introducing into the mold the material to be molded, agitating the mold to compact the material, and compressing the material <sup>with application of heat 64-65</sup> to form an article of desired shape, substantially as described.

<sup>15</sup>  
19. The method of molding which comprises introducing into a mold a fixed and definite amount of the material to be molded, agitating the mold to compact the material, and compressing the material <sup>with application of heat 64-65</sup> to form an article of desired shape, substantially as described.

<sup>16</sup>  
20. The method of molding which comprises introducing powdered material into a mold, agitating the mold to compact the material, and compressing the material <sup>with application of heat 64-65</sup> to form an article of desired shape, substantially as described. (9/15)



17:  
21. The method of molding which comprises introducing into a mold a charge of material to be molded, forming a crown on the upper surface of the material, and compressing the material to form an article of substantially uniform thickness, substantially as described.

18:  
22. The method of molding which comprises introducing into a mold a charge of the material to be molded, forming a ridge adjacent the periphery of the material in the mold, and compressing said material to form an article of substantially uniform thickness, substantially as described.

19:  
23. The method of molding which comprises introducing into a mold a charge of the material to be molded, forming a crown on the upper surface and a ridge adjacent the periphery of the material in the mold, and compressing said material to form an article of substantially uniform thickness, substantially as described.

20:  
24. The method of molding which comprises introducing into a mold a charge of the material to be molded, agitating the mold to compact the material therein, forming a crown on the upper surface of the material, and compressing the material to form an article of substantially uniform thickness, substantially as described.

21:  
25. The method of molding which comprises introducing into a mold a charge of the material to be molded, agitating the mold to compact the material therein, forming a ridge adjacent the periphery of the material in the mold, and compressing said material to form an article of substantially uniform thickness, substantially as described.

<sup>22</sup>  
26. The method of molding which comprises introducing into a mold a charge of the material to be molded, agitating the mold to compact the material therein, forming a crown on the upper surface and a ridge adjacent the periphery of the material in the mold, and compressing said material to form an article of substantially uniform thickness, substantially as described.

cls 1 to 3 Rewritten - Invent A - 4/9/15  
Transcl. 6 to 11 incl - A - 4/9/15

This specification signed and witnessed this 28<sup>th</sup> day of April 1914

Thos. A. Edison

Witnesseth:

1. Frederick Bachmann
2. Mary J. Laidlaw

## Oath.

State of New Jersey } ss.,  
County of Essex

THOMAS A. EDISON, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Mewelllyn Park, West Orange, Essex County, New Jersey,

that he verily believes himself to be the original, first and sole inventor of the improvements in METHOD AND APPARATUS FOR THE PRODUCTION OF MOLDED ARTICLES

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to this application; or patented in any country foreign to the United States on an application filed more than twelve months prior to this application; or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his legal representatives or assigns in any foreign country.

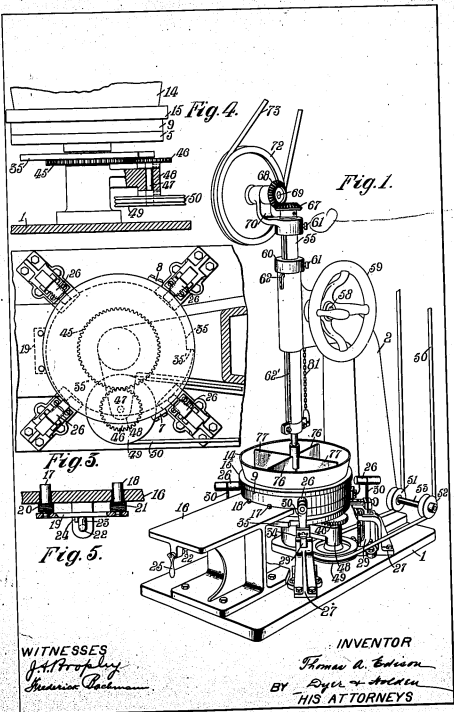
Sworn to and subscribed before me this 28<sup>th</sup> day of April 1914

(Seal)

Thos. A. Edison  
Mary J. Laidlaw  
Notary Public  
NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

July 9/03

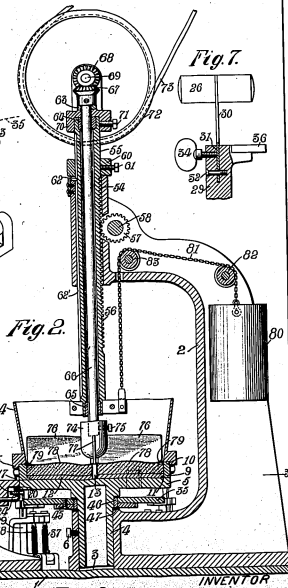
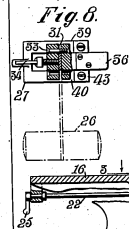
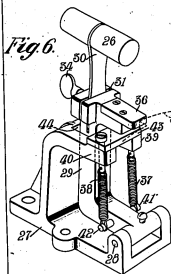
Serial No. 836,608 Div. 15  
2 Sheets-First



WITNESSES  
J. A. Propley  
Katherine Bachman

INVENTOR  
Thomas A. Edison  
BY Ryle & Holden  
HIS ATTORNEYS

June 9/13



WITNESSES  
J. H. Propoy  
Arthur Bach

Fig. 9.

INVENTOR  
Thomas A. Edison  
BY  
Edwin S. Redkey  
HIS ATTORNEYS

DIV. 15 Room 308

2-200

Paper No. 2

Address only  
The Commissioner of Patents,  
Washington, D. C.,  
and set my official by name.

H. D. B.

No.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

July 7, 1914.

U. S. PATENT OFFICE

JUL 7 1914

MAILED.

Dyer & Holden,

Wilson Office Building,

Orange, New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Wilson, Serial No. 836,608, filed May 6, 1914, for

Method and Apparatus for the Production of Molded Articles.

Thomas Ewing,  
Commissioner of Patents.

Reference character 71 occurs incorrectly applied in Fig.

1.

Claims 1 to 5, inclusive, are rejected on the patent to  
McKibben, 720,053, Feb. 10, 1903, (25-Juggers) ele-  
ment A answering to a mold, and elements 7 hammers arranged ap-  
positely to strike in succession.

Claims 6 to 14, inclusive, are rejected on the patent to  
Baaburg, 1,029,925, June 18, 1912, (18-5) Fig. 6.  
Palatte 33 answers to a mold and sweep 26 a moving vane for dis-  
tributing the material and forming the upper surface crowning  
and with a ridge at the periphery.

Claims 15 to 17 are rejected on the patent to Car  
Carson et al., 326,018, Sept. 8, 1885, (25-36) Fig. 3.  
Packers E are for compacting the material in the mold and wings  
B' for distributing and smoothing the material at the upper sur-  
face.

Claims 18 to 20, inclusive, are substantially met by and  
are rejected on the patent to  
Adams, 697,385, Apr. 8, 1902, (22-45) which discloses  
agitator and compressing the material packed.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

METHOD AND APPARATUS FOR THE  
PRODUCTION OF MOLDED ARTICLES

Room No. 308.

Filed May 6, 1914

Serial No. 836,608

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
July 7, 1914, please amend the above entitled case as  
follows:-

Page 3, line 10, after "container" insert - or  
hood - .

Rewrite claims 1, 2 and 3 as follows: -

1. In apparatus of the class described, the  
combination of a mold, a pair of hammers arranged on  
opposite sides of the mold, and a cam for actuating said  
hammers to cause the same to strike the mold at different  
times, substantially as described.

A

2. In apparatus of the class described, the  
combination of a mold, a plurality of pairs of hammers  
arranged around said mold, the hammers of each pair being  
arranged opposite each other, and a cam for actuating said  
hammers to cause the same to strike the mold at different  
times, substantially as described.

3. In apparatus of the class described, the  
combination of a mold, a hammer, resilient means supporting

said hammer, and means for actuating said hammer to cause the same to strike the mold, substantially as described. -

Canoe! claims 6 to 15 inclusive, and insert the following as new claims 6 to 11 inclusive: -

6. The combination of a mold, a hood on the same, and rotatable means arranged within said hood for distributing in said mold material to be molded and for forming the upper surface of the material, substantially as described.

7. The combination of a mold, a hood on the same, and a rotatable vane arranged within said hood for distributing in said mold material to be molded and for forming the upper surface of the material, substantially as described.

8. The combination of a mold, a hood on the same, and a rotatable vane substantially fitting within said hood for distributing in said mold material to be molded and for forming the upper surface of the material, substantially as described.

9. The combination of a rotatable support, a table adjacent thereto and substantially flush with the upper surface thereof, and means arranged to be depressed below the upper surface of said table for retaining a mold in position on said support, substantially as described.

10. The combination of a rotatable support, a table adjacent thereto and substantially flush with the upper surface thereof, means for retaining a mold in position on said support, and means for depressing said re-



taining means below the upper surface of said support, substantially as described.

11. The combination of a rotatable support, a table adjacent thereto and substantially flush with the upper surface thereof, means for retaining a mold in position on said support, resilient means tending to hold said retaining means in elevated position, and means for depressing said retaining means below the upper surface of said support, substantially as described. -

Claim 18, line 4, after "material" insert - with application of heat - .

Claim 19, line 4, after "material" insert - with application of heat - .

Claim 20, line 3, after "material", second occurrence, insert - with application of heat - .

Renumber claims 16 to 26 inclusive as 12 to 22 inclusive.

#### R E M A R K S

Claims 1 and 2 distinguish from the references by specifying a cam for actuating the hammers in a novel manner.

Claim 3 distinguishes from the references by specifying a novel mounting for the hammer.

Referring to claim 4, the patent to McKibben does not show means for actuating the hammers at different times.

Referring to claim 5, the patent to McKibben does not show a plurality of pairs of hammers, nor does it show means for actuating the hammers in the order set forth in this claim.

Referring to claims 6, 7 and 8, the references do not show a hood on the mold and rotatable means arranged within the hood for distributing the material to be molded and for forming the upper surface thereof.

Referring to claims 9, 10 and 11, the references do not show a rotatable support, a table and retaining means arranged and combined as set forth in these claims.

Referring to claims 12 and 13, former claims 16 and 17, the patent to Carson et al. does not show means for forming the upper surface of the material. The wings B' of the Carson patent are not designed to produce this result.

Referring to claims 14, 15 and 16, former claims 18, 19 and 20, the patent to Adams does not show the step of compressing the material with application of heat to form an article of the desired shape.

Reconsideration and allowance are requested.

Respectfully submitted

THOMAS A. EDISON

By Ryan & Hadden  
His Attorneys

Orange, New Jersey

June 9, 1915

FB-JS

ADDRESSEE ONLY  
THE COMMISSIONER OF PATENTS,  
WASHINGTON, D. C.

JBW 2-181

983  
Serial No. 886608

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON June 22, 1915

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

Thomas A. Edison,  
Sir: Your APPLICATION for a patent for an IMPROVEMENT in  
Method and apparatus for the production of molded articles  
filed May 6, 1914 has been examined and ALLOWED.  
The final fee, TWENTY DOLLARS, must be paid not later than  
SIX MONTHS from the date of this present notice of allowance.  
If the final fee be not paid within that period, the patent on  
this application will be withheld, unless renewed with an  
additional fee of \$15, under the provisions of Section 4897,  
Revised Statutes.

The office delivers patents upon the day of their date, and  
on which their term begins to run. The printing, photolitho-  
graphing, and engraving of the several patent parts, prepara-  
tory to final signing and sealing, will require about four  
weeks, and such work will not be undertaken until after payment  
of the necessary fee.

When you send the final fee you will also send, DISTINCTLY  
AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVEN-  
TION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE  
(which is the date of this circular), DATE OF FILING, and, if  
assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an  
assignment containing a REQUEST to that effect, together with  
the FEE for recording the same, must be filed in this office on  
or before the date of payment of final fee.

After issue of the patent uncertified copies of the draw-  
ings and specifications may be purchased at the price of FIVE  
CENTS EACH. The money should accompany the order. Postage  
stamps will not be received.

Final fees will NOT be received from other than the appli-  
cant, his assignee or attorney, or a party in interest as shown  
by the records of the Patent Office.

Respectfully,

Thomas Ewing  
Commissioner of Patents.

Dyer and Holden,

Edison Office Bldg.,

Orange, N.J.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.

Folio \_\_\_\_\_

STATEMENT OF INVENTOR

Invention disc Record Moulding Machine.

Conceived on 10/4/13 Made sketches on \_\_\_\_\_

Disclosed to Chas Lahr Date 11/2/13

" J. A. Propst " 12/2/13

Made drawing \_\_\_\_\_ Finished on \_\_\_\_\_

Model or complete working device started 11/7/13

Finished on 12/2/14

Is the invention in use? Yes

General Description of  
Invention.

The invention consists of a device for making the powder in a disc <sup>powder form</sup> moulded with uniformly and so shaping this mould by paddles so that the record blank when taken from a pressure machine will be more compact at the edge and, at the point where the sound waves will be recorded. This is accomplished by same operated spring hammers and notary paddles which give a crowning finish

Received by J. A. Propst Date 12/9/13.

Inventor Thomas A. Edison

Remarks \_\_\_\_\_

Note: This statement, together with sketch, to be put in the application file.

to the powder form + a fillet at its edge which when the powder form is placed in a pressure machine will give the required compactness or hardness at the desired points.



January 3, 1914.

Mr. Bachman:-

Mr. Edison's device for egitating  
the powder in molding disc records is to be held  
in Patent Office as long as possible, in order to  
keep the process secret.

J. A. BROPHY.

Folio 983  
Thomas A. Edison,  
Ser. No. 836608  
Method and Apparatus for the production of Molded Articles.  
Filed May 6, 1914  
Allowed June 22, 1915  
Final Fee Due Dec. 22, 1915

Mr. Holden: Any foreign application? *No.*

*ok* Should this case be assigned to H. J. Patent Co.? If so,  
~~When?~~ *Yes. When other business matters are*

When do you wish final fee paid? *See me on Dec. 15*

J. Unger.

*M. Berchman  
League Dept*

*Original in Feb 905*

*7-2983*

December 3, 1915

Mr. Edison:-

The applications herewith, which at the time of filing you wanted to "soak" in the Patent Office, have been allowed. These applications are:

Folio 905, which covers the apparatus and method of covering the disc master records with a coating of gold, the apparatus having electrodes arranged to produce a coating of substantially even thickness.

Folio 983, which covers the method and apparatus for loading the blank molds for the disc records with the powdered blank material, the molds being agitated by hammers arranged around their peripheries, and the tops of the molds being shaped by rotating scrapers.

Any one of the following things can now be done with these applications:-

1st: The patents may be taken out by the payment of the final fees.

2nd: The applications may be abandoned.

3rd: The applications may be forfeited for failure to pay the final fees within six months after allowance. After forfeiture, the applications are subject to renewal at any time within two years after the allowance of the original applications. Upon renewal, a second filing fee of \$15.00 must be paid for each application. By this means, the case may be kept from abandonment in the Patent Office at least two years longer.

Please advise me with respect to each of these cases whether you wish the patent taken out, the application abandoned, or the application forfeited.

*do this*



**Patent Series**  
**Patent Application Files**

Folio # 985      Improvement in Molding Apparatus

Serial #:            837706

Primary Applicant: Nehr, William F

Date Executed:     5/9/1914

Folio No. 985

Serial No. 837706

Applicant's

Address.

*Wm. F. Neher* *58 Mt Pleasant Ave*  
*and* *West Orange, N.J.*  
*August Weinert* *125 Fairmount Ave*  
*Newark, N.J.*

Title *Improvements in Holding Apparatus*

Filed *May 11-1914* Examiner's Room No. *308*

Assignee *New Jersey Patent Co*

Ass'g't Exec. *May 9-1914* Recorded *May 11-1914* Liber *794* Page *443*

Patent No. *Abandoned* Issued *July 2, 1915*

ACTIONS.

- 1 Rejected Sept. 18-1914* 16 *See memo of*  
*2 Amended July 27-1915* 17 *Abandoned - See memo of*  
*3 Rejected Aug. 18, 1915* 18 *Mr Edison in folder*  
*4 Amended Aug. 9, 1916* 19  
*5 Rejected Aug. 18, 1916* 20  
*6 Amended July 24, 1917* 21  
*Final Rejection Aug. 21, 1917* 22  
8 23  
9 24  
10 25  
11 26  
12 27  
13 28  
14 29  
15 30

DYER & HOLDEN,  
ORANGE, NEW JERSEY.

P E T I T I O N.

TO THE COMMISSIONER OF PATENTS:

Your petitioners, WILLIAM F. NEHR, residing at West Orange, in the County of Essex and State of New Jersey, and having a post office address at No. 58 Mt. Pleasant Avenue, West Orange, in said County and State, and AUGUST WEINERT, residing at Newark, in the County of Essex and State of New Jersey and having a post office address at No. 105 Fairmount Avenue, Newark, in said County and State, both citizens of the United States, pray that Letters Patent may be granted to them for IMPROVEMENTS IN MOLDING APPARATUS, set forth in the annexed specification, and they hereby appoint Dyer & Holden, (Registration No. 3244) a firm composed of Frank L. Dyer and Delos Holden, whose address is Edison Office Building, Orange, New Jersey, their attorneys, with full power of substitution and revocation, to prosecute this application, to make amendments and alterations therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

William F. Nehr

August Weinert

S P E C I F I C A T I O N .

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that we, WILLIAM F. MEHR, a citizen of the United States, and a resident of West Orange in the County of Essex and State of New Jersey, and AUGUST WEINERT, a citizen of the United States, and a resident of Newark, Essex County, and State of New Jersey, have invented certain new and useful improvements in HOLDING APPARATUS, of which the following is a description:

Our invention relates to Molding Apparatus and more particularly to apparatus for molding or forming the ends of sound record cylinders of celluloid or the like. In an application of Brian F. Philpot, Serial No. 739,975 filed January 3, 1913 and entitled Molding Phonograph Records, there is shown and described apparatus whereby amongst other things record cylinders are molded with a conical flange at one end. As these cylinders are taken out of the molding apparatus while still in a somewhat plastic condition, the conical flanges on the same frequently become distorted and misshaped in the removal of the cylinders from the said apparatus. The principal object of <sup>our 7/23/15</sup> my invention is to provide an improved apparatus whereby the flanges referred to may be readily formed or reformed into the desired shape. Other objects of <sup>our 7/23/15</sup> my invention will appear more fully in the following specification and appended claims:

67  
B5  
FA

In order that <sup>our 7/23/15</sup> my invention may be more clearly understood, attention is hereby directed to the accompanying drawing forming a part of this specification and in which -

Fig. 1 is a plan view illustrating one embodiment

*our* ~~my~~ invention;

*an enlarged* ~~Fig. 1~~  
Fig. 2 is a horizontal sectional view of a portion of the apparatus shown in Fig. 1;

Fig. 3 is a view partly in horizontal section and partly in plan of a portion of the apparatus shown in Fig. 2, the parts being shown in operative position for forming or shaping the flange on the end of the record cylinder;

Fig. 4 is a detail sectional view taken on the line 4 - 4 of Fig. 2;

Fig. 5 is a sectional view taken on the line 5 - 5 of Fig. 4; and

Figs. 6 and 7 are central sectional views of a portion of the record cylinder showing the form thereof respectively before and after the shaping thereof by ~~my~~ *our* improved apparatus.

In all of the views, like parts are designated by the same reference numerals.

Referring to the drawing, a base 1 has secured thereto a plurality of brackets 2 and 3 which rotatably support a shaft 4 extending longitudinally of the said base. Projecting from the inner end of the shaft 4 and arranged co-axially with said shaft is a shaft 5, the latter being secured, as by a pin 6 in an opening 7 in the end of the shaft 4. A mold or die 8 is fixedly secured to the shaft 5 adjacent the outer end thereof, the said mold or die being provided with an annular recess 9, of curved cross section in which the flange 10 at the end of record cylinder 11 is adapted to be formed. A cylindrical

member 12 having an outer diameter substantially equal to the inner diameter of the recess 9 is secured to the end of shaft 5 in engagement with mold 8. A pin 14 passing through the mold 8 and projecting into the member 12 serves to prevent relative rotation between said mold and member. In order to heat the mold 8, we provide a hollow steam chest 15 having a recess 16 in which the mold 8 is rotatably seated. The steam chest 15 is provided with an inlet pipe 17 and an outlet pipe 18 for the steam or other heating fluid and is secured, as by screws 19 and 20, to a bracket 21 secured to the base 1. The bracket 21 and steam chest 15 are provided with a central bore 22 serving as a bearing for the shaft 5, the bracket 21 abutting against the inner end of shaft 4. To force the flange 10 into the recess 9, we provide a plurality of rods or pins 23 and 24 inclined at an angle to each other and to the axis of the member 12 and slidably mounted in openings 25 and 26 respectively so as to be movable outwardly of the member 12 towards the recess 9 and flange 10 or inwardly entirely within the cylindrical outer surface of the member 12. The outer ends of the rods 23 and 24 have movably mounted therein balls or spheres 27 and 28 respectively of hardened steel or other suitable wear-resisting material. Springs 29 and 30 arranged respectively between the heads 31 and 32 on the rods 23 and 24 and shoulders 33 and 34 in the openings 25 and 26 tend to hold the rods 23 and 24 retracted within the member 12. A plate 35 secured to the end of member 12, as by screws 36 and 37, is provided with openings in which a plurality of pins 38 and 39 are slidably mounted for movement longitudinally of the shaft 5. The inner ends of the pins 38 and 39 are provided with semi-spherical heads 40 and 41

arranged to bear on the heads 31 and 32 respectively and formed of hardened steel or other wear-resisting material. A plate 42 is provided with rods or stems 43 and 44 which pass through the member 35 and are slidable in longitudinal recesses 45 and 46 respectively in the member 12. A screw 47 secured in the member 12 and projecting into a slot 48 in the member 44 is arranged to engage the end of said slot to limit the movement of the plate 42 and the parts connected thereto inwardly and outwardly of the member 12. The plate 42 bears against the pins 38 and 39 and is adapted when moved towards the mold or die 8 to move the said pins in the same direction, the said pins causing the members 23 and 24 to be moved outwardly to force the flange 10 into close engagement with the groove or recess 9.

To facilitate the inward movement of the plate 42, we provide a shaft 49 which is mounted for longitudinal sliding movement in bearings 50 and 51 on a carriage 52, the end of shaft 49 adjacent plate 42 being provided with a hardened steel spherical bearing member 53 adapted to engage the hardened bearing 54 inserted in the center of plate 42. A lever 55 is pivoted to the shaft 49, as at 56, and has its rear end pivotally connected to one end of a link 57, the other end of link 57 being pivoted to the carriage 52. By moving the forward end of the lever 55 to the left, referring to Fig. 1, the shaft 49 is moved to the left and causes the bearings 53 and ~~54~~ to engage each other whereupon further movement of the forward end of the lever 55 towards the left causes the plates 42, pins 38 and 39, and the rods 23 and 24 to be moved to the left until the bearings 27 and 28 force the flange 10 into intimate engagement with the recess 9. A tension spring 58 connected at its ends to the shaft 49 and to the base

1 tends to cause the said shaft and the parts carried thereby to return to their extreme right hand positions. A collar 59 on the shaft 49 is adapted to engage the bearing 51 to limit the movement of the shaft 49 to the left, referring to Fig. 1. A head 60 secured to the inner end of the shaft 49 is adapted to engage the bearing 50 to limit movement of the shaft 49 towards the right, referring to Fig. 1. The head 60 is provided at one end with a conical portion 61 tapering towards the bearing 50 and at the opposite end with the flange 62. Between the conical portion 61 and flange 62, the head 60 is provided with a cylindrical portion 63, the outer diameter of which is equal to the inner diameter of the flange 64 at the right hand end of the record cylinder 11, referring to Figures 2 and 3. The part 61 tends to center or align the record cylinder with respect to the mold 8 and the parts 62 and 63 tend to hold the same in operative position, the part 63 supporting the flange 64 and the flange 62 bearing against the end of the record cylinder. To permit adjustment of the shaft 49 and the parts carried thereby, the carriage 52 is slidable <sup>in a direction</sup> ~~transversely~~ <sup>transversely</sup> with respect to said shaft on a way 65 and on carriage 66, the latter being slidable longitudinally of the base 1. A screw 67 carried by the carriage 52 coacts with a slotted projection 68 on the carriage 66 to facilitate the manual adjustment of the shaft 49 and carriage 52 in a direction transversely of said shaft. Longitudinal adjustment of the shaft 49 is effected by a screw 69 threaded into the carriage 66 and having its head engaged in notch 70 in base 1.



In operation, the cylinder 11 is held against the mold 8 in the position shown in Fig. 2 with the flange 10 located over the recess 9. The forward end of lever 56 is then moved to the left to cause the balls 27 and 28 to force the flange 10 into close engagement with the recess 9. The belt 71 is now shifted from the pulley 72, which is loose on shaft 4, to the pulley 73, which is secured to said shaft, whereupon the latter starts ~~to~~<sup>7/27/15</sup> to rotate and carries with it the mold 8 and the member 12 and parts carried thereby. The cylinder 11 is held against rotation by the hand of the operator, so that the rotation of the mold and the head 12 causes the balls 28 and 27 to roll around the inner surface of the flange 10 to thereby form the latter to the shape of the groove 9, the flange 10 being softened by reason of the heat imparted to the mold 8 by the steam chest 15. After the flange 10 has been properly formed, the spring 58 is permitted to move the shaft 49 to its extreme right hand position after which the cylinder 11 with the flange 10 properly shaped may be readily removed from the apparatus. If desired, the shaft 4 and the parts which rotate therewith may be kept continuously in operation during the molding of a large number of cylinders.

Many changes may be made in the apparatus disclosed without departing from the spirit of ~~my~~<sup>7/27/15</sup> invention, and I wish, therefore, not to be limited to the exact details shown and described.

Having now described ~~my~~<sup>7/27/15</sup> invention what I claim as new and desire to protect by Letters Patent of the United States is as follows: <sup>7/27/15</sup> ~~Invent A-4611-5~~

1. In molding apparatus, the combination of a mold and rotatable means for forcing the material to be molded into close engagement with said mold, substantially as described.

2. In molding apparatus, the combination of a mold and rotatable means comprising a member for forcing the material into close engagement with said mold, said member being mounted for movement toward and away from said mold, substantially as described.

3. In molding apparatus, the combination of a mold and rotatable means comprising a spring-pressed member for forcing the material into close engagement with said mold, said member being mounted for movement toward and away from said mold, substantially as described.

4. In molding apparatus, the combination of a mold and rotatable means comprising a member arranged to roll on the material to be molded and to force the same into close engagement with the mold, substantially as described.

5. In molding apparatus, the combination of a mold and rotatable means comprising a spring-pressed member arranged to roll on the material to be molded and to force the same into close engagement with the mold, substantially as described.

6. In molding apparatus, the combination of a <sup>rotatable</sup> means for heating the same, and rotatable means <sup>carried by said mold and movable relatively thereto</sup> for forcing the material to be molded into close engagement <sup>the molding surface of said</sup> with said mold, substantially as described.

7. In molding apparatus, the combination of a <sup>rotatable</sup> means for heating the same, and rotatable means comprising <sup>carried by the mold</sup> a member for forcing the material into close engagement <sup>the molding surface of said</sup> with said mold, said member being mounted for movement toward and away from said mold, substantially as described.

8. In molding apparatus, the combination of a mold, <sup>mounted so as to be rotatable of moving independently of each other away from the mold and arranged to move toward the mold 7/27/15</sup> rotatable means comprising a plurality of members arranged <sup>to force the material to be molded into close engagement with said mold, and means for moving said members towards and away from said mold, substantially as described. 7/27/15</sup>

9. In molding apparatus, the combination of a mold, <sup>mounted so as to be rotatable of moving independently of each other away from the mold and arranged to move toward the mold 7/27/15</sup> rotatable means comprising a plurality of members arranged <sup>to force the material to be molded into close engagement with said mold, resilient means tending to move said members away from said mold, and means for moving said members towards said mold, substantially as described. 7/27/15</sup>

<sup>Cancelled 7/27/15</sup>  
10. In molding apparatus, the combination of a mold, means for supporting the material to be molded in operative relation to said mold, and means for forcing said material into close engagement with said mold, substantially as described.

This specification signed and witnessed this  
9th day of May 1914.

William F. Nehr

August Weinst

Witnesses to signature of  
William F. Nehr

Frederick Bachmann

Mary J. Laidlaw

Sheet B' - Claims 10 to 14 Inck.  
Sheet C - Claim 1 - submitted 7/27/15

Witnesses to signature of  
August Weinst.

Frederick Bachmann

Mary J. Laidlaw

O A T H

State of New Jersey }  
County of Essex. } ss.:

WILLIAM F. NEHR, one of the above named petitioners, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of West Orange, in the County of Essex and State of New Jersey; that he verily believes himself and the said AUGUST WEINERT to be the original, first and joint inventors of the IMPROVEMENTS IN MOLDING APPARATUS, described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before their joint invention or discovery thereof; or patented or described in any printed publication in any country before their invention or discovery thereof, or more than two years prior to this application; or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by them or their legal representatives or assigns more than twelve months prior to this application; and that no application for patent upon said invention has been filed by them or their legal representatives or assigns in any country foreign to the United States.

Sworn to and subscribed before me this 9th day  
of May 1914.

(seal)

William F. Nehr

Mary J. Laislaw  
Notary Public.  
NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

O A T H

State of New Jersey }  
County of Essex. } ss.:

AUGUST WEINERT, one of the above named petitioners, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Newark, in the County of Essex and State of New Jersey; that he verily believes himself and the said WILLIAM F. NEHR to be the original, first and joint inventors of the IMPROVEMENTS IN MOLDING APPARATUS, described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before their joint invention or discovery thereof; or patented or described in any printed publication in any country before their invention or discovery thereof, or more than two years prior to this application; or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by them or their legal representatives or assigns more than twelve months prior to this application; and that no application for patent upon said invention has been filed by them or their legal representatives or assigns in any country foreign to the United States.

August Weinert

Sworn to and subscribed before me this 9th day  
of May 1914.

Mary J. Linsler

Notary Public.  
NOTARY PUBLIC, STATE OF NEW JERSEY.  
COMMISSION EXPIRES SEPT. 5, 1917

(seal)

Pat. 925

Fig. 1.

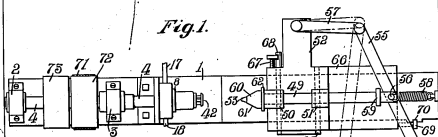


Fig. 2.

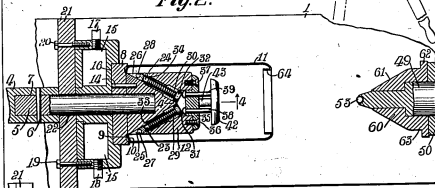


Fig. 4.

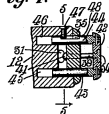


Fig. 5.

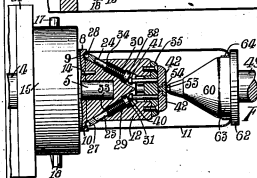


Fig. 7.

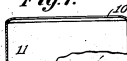
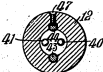


Fig. 6.

WITNESSES  
J. A. Murphy  
Edward Bachman

Fig. 5.



INVENTORS  
William S. Rehr  
August Minnet  
BY  
Eugene A. Holden  
THEIR ATTORNEYS

Div. 15. Room 308

Address only  
"The Commissioner of Patents,  
Washington, D. C."  
and not any official by name.

2-200

H. D. B.

No.

Paper No. 2

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

WASHINGTON

Sept. 18, 1914.

Dyer & Holden,

Mission Office Building,

Orange, New Jersey.

U. S. PATENT OFFICE,  
SEP 18 1914  
MAILED.

Please find below a communication from the EXAMINER in charge of the application of

Nehr & Weinert, Serial No. 837,706, filed May 11, 1914, for

Molding Apparatus.

*Thomas Ewing*  
Commissioner of Patents.

20-2041

and page 6, line 26.

Page 1, lines 21, 24 and 26, "my" should be our.

Page 4, seventh line from the last, "68" should be 54.

Page 6, line 8, "in" should be canceled. Line 28, "I"  
should be we.

Claims 1, 2, 4, 6, 7 and 10 are rejected on the patent to  
Harris, 837,061, Nov. 27, 1906, (18-48,3), element 2  
being a mold and element 4 rotatable means for forcing material  
into close engagement with the mold.

Claims 3 and 5 are rejected on the same reference. The  
spring mounting would not inject patentable feature in such re-  
lation in view of

Helsey, 663,023, Dec. 4, 1900, (40-22).

Claims 8 and 9 are rejected on the latter reference, which  
shows a plurality of rolling members.

IN THE UNITED STATES PATENT OFFICE

Wm. F. Nehr and August  
Weinert

IMPROVEMENTS IN MOLDING  
APPARATUS

Room No. 308.

Filed May 11, 1914

Serial No. 837,706

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
September 18, 1914, please amend the above entitled case  
as follows:-

Page 1, line 21, change "my" to - our - . Line  
24, change "my" to - our - . Line 26, change "my" to -  
our - .

Page 4, 7th line from the bottom, change "64" to  
- 54 - .

Page 6, line 8, cancel "in". Line 25, change  
"my" to - our - . Line 26, change "I" to - we - . Line  
28, change "my" to - our - , and "I" to - we - .

Claim 6, line 1, after "a" insert - rotatable - .

Claim 7, line 1, after "a" insert - rotatable - .

Claim 8, line 4, change "for moving" to - arranged  
to be shifted by the operator of the apparatus to move - .  
Line 5, cancel "and away from".

Claim 9, line 5, change "for moving" to - arranged  
to be shifted by the operator of the apparatus to move - .



Cancel claims 1 to 5 inclusive and 10.

Insert the following as new claims 1 to 5 inclusive:

ive: -

1. In molding apparatus, the combination of a <sup>carried by the mold and movable relative thereto</sup> mold, rotatable means comprising a member <sup>the molding surface of</sup> arranged to force the material to be molded into close engagement with said mold, and means arranged to be shifted by the operator of the apparatus to move said member <sup>relatively to the mold</sup> towards said mold, substantially as described.

2. In molding apparatus, the combination of a mold, rotatable means comprising a member <sup>carried by the mold and movable</sup> arranged to force the material to be molded into close engagement with said mold, <sup>the molding surface of</sup> means tending to move said member away from said mold, and means arranged to be shifted by the operator of the apparatus to move said member <sup>molding surface</sup> towards said mold, substantially as described.

3. In molding apparatus, the combination of a mold, rotatable means comprising a member <sup>carried by the mold and movable</sup> arranged to roll upon and force the material to be molded into close engagement with said mold, and means arranged to be shifted by the operator of the apparatus to move said member <sup>molding surface</sup> towards said mold, substantially as described.

4. In molding apparatus, the combination of a mold, rotatable means comprising a member <sup>carried by the mold and movable</sup> arranged to force the material to be molded into close engagement with said mold, and means <sup>the molding surface of</sup> arranged to be shifted by the operator of the apparatus to move said member <sup>relatively to the mold</sup> towards said mold at an ~~angle to the axis of rotation of the rotatable means~~, substantially as described.

5. In molding apparatus, the combination of a

a  
mold, rotatable means comprising a member arranged to force the material to be molded into close engagement with said mold, and means arranged to be shifted by the operator of the apparatus to move said member towards said mold, said last named means serving to <sup>engage and hold</sup> hold the material to be molded in operative relation to the mold, substantially as described. -

R E M A R K S

The references of record do not show means arranged to be shifted by the operator of the apparatus to move the member towards the mold, as set forth in claims 1 to 5 inclusive, 8 and 9. Referring to claims 6 and 7, the references of record do not disclose a rotatable mold and means for heating the same.

Reconsideration and allowance are requested.

Respectfully submitted,

WILLIAM F. NEHR and AUGUST  
WEINERT

By Dyer & Stetson  
Their Attorneys

Orange, New Jersey

July 27, 1915

FB-JS

Div. 15, Room 308--

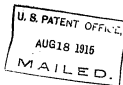
*Advent only*  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-200

M. P. R.-M

Paper No. 1 985  
All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON August 18, 1915



Dyer & Holden,

Edison Office Building,

Orange, New Jersey.

Please find below a communication from the EXAMINER in charge of the application of

William F. Mohr and August Weinert, Ser. No. 837,706, filed

May 11, 1914, for Molding Apparatus.

Thomas Ewing  
Commissioner of Patents.

2-2021

In response to amendment filed July 28, 1915:

Claims 1 to 5, incl., ~~are~~ rejected for instance on  
the patent to

Smith, 40,506, Nov. 3, 1863 (25-24)

which shows a molding apparatus comprising a mold h, etc.,  
a rotatable member h arranged to force the material to be  
molded into close engagement with the mold, counterweight  
means answering to resilient means ~~and~~ tending to move said member  
away, and carriage means f, etc., arranged to be shifted, etc.

The use of heating means in such molding apparatus is old.

See for instance 13

Weeks, 616,378 Dec. 20, 1898 (25-24), Fig. 2.

Claims 6 and 7 are accordingly rejected.

Claims 3 and 9 are also rejected on Smith in view of

Newkumet, 66,243, Jan. 18, 1869 (25-24), Fig. 1, which  
shows the rotatable means comprising a plurality of members P.

IN THE UNITED STATES PATENT OFFICE

William F. Nehr  
and  
August Weinert

IMPROVEMENTS IN MOLDING  
APPARATUS

Filed May 11, 1914

Serial No. 837,706

Room No. 308.

HONORABLE COMMISSIONER OF PATENTS.

S I R :

In response to the Office action of  
August 18, 1915, please amend the above entitled case as  
follows:-

Page 2, line 1, cancel "my" and insert - our - .  
Line 2, cancel "a", first occurrence, and insert - an  
enlarged - . Line 15, cancel "my" and insert - our - .

Page 3, line 21, change "end" to - ends - .

Page 4, line 7, change "end" to - ends - .

Page 5, lines 21 and 22, cancel "transversely  
with respect" and insert - in a direction transverse - .

Claim 1, line 2, cancel "arranged" and insert -  
carried by the mold and movable relatively thereto - .

Line 3, after "with" insert - the molding surface of - .

Line 5, cancel "towards" and insert - relatively to - .

Same line, after "mold" insert - towards the molding sur-  
face thereof - .

Claim 2, line 2, after "member" insert - carried

by the mold and - . Line 3, after "with" insert - the molding surface of - . Line 4, cancel "resilient". Line 5, cancel "mold" and insert - molding surface - .

Claim 3, line 2, after "member" insert - carried by the mold and - . Line 4, after "with" insert - the molding surface of - . Line 5, cancel "mold" and insert - molding surface - .

Claim 4, line 2, cancel "arranged" and insert -   
 18 <sup>1</sup>movable longitudinally in a direction at an angle to the axis of rotation of the rotatable means towards the mold - .

Line 3, after "with" insert - the molding surface of - . Line 5, after "member" insert - longitudinally - . Lines 5 and 6, cancel "mold at an angle to the axis of rotation of the rotatable means" and insert - molding surface - .

Claim 5, line 5, before "hold" insert - engage and - .

Claim 6, line 2, after "means", second occurrence, insert - carried by said mold and movable relatively thereto - . Line 4, after "with" insert - the molding surface of - .

Claim 7, line 2, after "member" insert - carried by the mold - . Line 4, after "with" insert - the molding surface of - . Line 5, cancel "mold" and insert - molding surface - .

Claims 8 and 9, line 2, after "members" insert - mounted so as to be capable of moving independently of each other away from the mold and - . Line 5, before "to", first occurrence, insert - upon movement thereof towards the mold - .

Add the following claims: -

10. In molding apparatus for forming an end flange on an article, a device having a molding surface for ~~the~~ <sup>each</sup> end portion of the article, and means comprising a rotatable member movable to engage and force such end portion into close engagement with said molding surface, substantially as described.

11. In molding apparatus for forming an end flange on a cylindrical article, a device having an annular molding surface with which one surface of an end portion of the article is adapted to be engaged, means comprising a rotatable member arranged to engage the opposite surface of such end portion of the article and to force such portion into close engagement with said molding surface, and manually operable means for moving said member towards said molding surface, substantially as described.

12. In molding apparatus for forming an end flange on a hollow cylindrical article, a pair of devices relatively movable towards and away from each other and adapted for engagement only with the ends of said article respectively, one of said devices having an annular molding surface, and rotatable means comprising a member movable towards and away from said molding surface and adapted upon movement towards said surface to engage the corresponding end portion of the article to force said portion closely into engagement with said molding surface, thereby forming an end flange on said article, substantially as described.

13. In molding apparatus for forming an end flange on a hollow cylindrical article, a pair of devices relatively movable towards and away from each other and adapted for engagement only with the ends of said article respectively, one of said devices having an annular molding surface, rotatable means comprising a member movable towards and away from said molding surface and adapted upon movement towards said surface to engage the corresponding end portion of the article to force said portion closely into engagement with said molding surface, thereby forming an end flange on said article, and manually operable means for moving said member towards said molding surface, substantially as described.

14. In molding apparatus for forming an end flange on a hollow cylindrical article, a device provided with an annular molding surface with which one surface of an end portion of the article is adapted to be engaged, and rotatable means comprising a member arranged to roll upon the opposite surface of such end portion and force such portion into close engagement with said molding surface, substantially as described. -

#### REMARKS

Claim 1 as now presented clearly distinguishes from the references of record by specifying rotatable means comprising a member carried by the mold and movable relative thereto to force the material to be molded into close engagement with the molding surface of the mold.

Claims 2, 3, 6 and 7 as amended distinguish from

the references in a manner similar to that indicated in connection with claim 1.

Claim 4 distinguishes from the references by specifying rotatable means comprising a member movable longitudinally in a direction at an angle to the axis of rotation of said rotatable means towards the mold to force the material to be molded into close engagement with the molding surface of the mold.

Claim 5 distinguishes from the references by specifying that the means arranged to be shifted by the operator to thereby move the member to force the material to be molded into engagement with the mold, serves to engage and hold the material to be molded in operative relation to the mold.

Claims 8 and 9 distinguish from the references by specifying rotatable means comprising a plurality of members mounted so as to be capable of moving independently of each other away from the mold, and arranged upon movement towards the mold to force the material to be molded into close engagement with the mold.

New claims 10 to 14 presented herewith are believed to be allowable and are thought necessary in order to adequately protect applicants in their invention. These claims cover a construction for molding an end flange on an article, and each sets forth a structure which is quite different from that disclosed in any of the references of record.

Further consideration and allowance are requested.

Respectfully submitted,

WILLIAM F. NEER and AUGUST WEINERT

By Dyer and Holden  
Their Attorneys

Orange, N. J.  
August 8, 1916

WH-JS



Div. 15 Room 308

2-200

Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

Paper No. 785  
All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

M/H

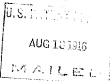
DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Aug. 10, 1916

Dyer and Holston,

Edison Office Bldg.,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

William P. Nehr and A. Weinert, Ser. No. 857,706, filed May 11, 1914  
for Molding Apparatus.

Thomas Ewing  
Commissioner of Patents.

6-5821

This is in response to amendment filed Aug. 10, 1916.

Claim 4 is rejected on the

British patent to Wood, 2291 of 1876, (25-24) Fig. 1,

which shows a mold B, a rotatable member D movable longitudinally  
in a direction ~~at right angles~~ to the axis of rotation toward the mold  
to force the material to be molded into close engagement with the  
molding surfaces, etc.

Claims 10 to 14 are rejected on the patent to

Grimm, 576,960, Feb. 9, 1897, (18-5)

which shows an apparatus for molding end flanges on cylindrical  
articles comprising a device 1<sup>5</sup> having an annular molding surface  
with which one end of the article is engaged, and means comprising  
a rotatable member 5 to engage the opposite end surface to force  
the article into close engagement with said molding surface, and  
manually operated means X, etc., for moving said member towards  
said molding surface, etc.

Examiner, Div. 15.

IN THE UNITED STATES PATENT OFFICE

William F. Nehr  
and  
August Weinert

IMPROVEMENTS IN MOLDING  
APPARATUS

Room No. 308.

Filed May 11, 1914

Serial No. 837,706

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of  
August 18, 1916, please amend the above entitled case as  
follows:

Rewrite claim 4, as follows:

4. In molding apparatus, the combination of a  
rotatable mold, rotatable means comprising a member bodily  
movable longitudinally in a direction at an angle to the  
axis of rotation of the mold towards the mold to force  
the material to be molded into close engagement with the  
molding surface of said mold, and means operable to move  
said member longitudinally towards said molding surface,  
substantially as described.

Claim 10, ~~line~~ 3, cancel "the", first occurrence,  
and insert - one - .

R E M A R K S

Claim 4 as rewritten clearly distinguishes from  
British Patent to Wood by specifying rotatable means com-  
prising a member bodily movable longitudinally in a direc-  
tion at an angle to the axis of rotation of the mold. In

the device disclosed by Wood member D is not movable longitudinally in a direction at an angle to the axis of rotation of the mold B.

It is submitted that claims 10 to 14 clearly distinguish from Grimm in their present form. In the device disclosed by Grimm the members 1<sup>5</sup> and 2<sup>5</sup> are arranged to engage the opposite ends of the cylindrical paper boxes to flange such ends.

Claim 10 distinguishes from Grimm by specifying a device having a molding surface for one end portion of the article and means comprising a rotatable member movable to engage and force such end portion into close engagement with said molding surface.

Claim 11 distinguishes from Grimm by specifying a device having an annular molding surface with which one surface of an end portion of the article is adapted to be engaged, and means comprising a rotatable member arranged to engage the opposite surface of such end portion of the article and to force such portion into close engagement with said molding surface.

Claims 12 and 13 distinguish from Grimm by specifying that one of the devices has an annular molding surface and rotatable means comprising a member movable towards and away from said molding surface and adapted upon movement towards said surface to engage the corresponding end portion of the article to force said portion closely into engagement with said molding surface.

Claim 14 distinguishes from Grimm by specifying a device provided with an annular molding surface with which

one surface of an end portion of the article is adapted to be engaged, and rotatable means comprising a member arranged to roll upon the opposite surface of such end portion and force such portion into close engagement with said molding surface.

In view of the above further consideration and allowance are requested.

Respectfully submitted,

WILLIAM F. NEHR and AUGUST WEINERT

By Dyer and Holden  
Their Attorneys.

Orange, N. J.

July 24, 1917.

WH-EH

Div. 15. Room 308

*Address only*  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-200

PAPER NO. 8

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

RECEIVED BY  
DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

Me/B

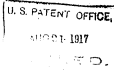
WASHINGTON

Aug. 21, 1917.

Dyer & Holden,

Edison Office Building,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Nehr & Weinert, Serial No. 837,706, filed May 11, 1915,

for Molding Apparatus.

A. F. Whithead,

Acting Commissioner of Patents.

4, 5-2021

In response to the amendment filed July 25, 1917:

Claims 10 to 13, inclusive, are finally rejected  
on Grimm, of record.

Examiner.

9/21/94  
Mr. Hutchinson

The accompanying  
is a device for putting a  
convex flange on the end  
of cylinder records and is  
being used in the cylinder  
record dept with success.

Kindly have Mr Edison  
pass on this before leaving  
for the south

J. A. Propley

Inventor

Mr. Keller

Mr. Edison:-

*Abandon*  
*W. G. Hardy*  
JUNE 28 1918  
FOLIO 985

The attached application Serial No. 837,706 of Messrs. Nehr and Weinert relates to apparatus for forming the turned over ends on the celluloid blanks for cylinder records. Ten of the claims of this application have been allowed, and the remaining four claims have been finally rejected..

As we no longer use the apparatus described in this application, I recommend that the application be abandoned and that we do not go to the expense of taking an appeal and taking out the patent.

What do you advise?

WH-JS

*Wm. G. Hardy.*

*Returned to Legal Dept. - July 3/18*

**Patent Series**  
**Patent Application Files**

Folio # 987      Storage Battery

U.S. Patent #:    1283779

Primary Applicant: Hutchison, Miller Reese

Date Executed:    5/22/1914



Mr Edison

My Submarine Cell  
patents have being held up  
for the last 2 or 3  
years, other far less  
important patents  
from dollars to cents  
standpound, being  
given for justice

The first thing we  
know we will be called  
on to pay someone a  
royalty on things we  
have invented for these  
cells.

I'd like to have the  
Submarine patents rushed  
into the files. M.M.H.

2/18/14.

Hutch  
Legal Dept

It is important that all  
Patents on Submarine  
Storage battery cells  
should be rushed

Edman

Hardy

Pls advise  
JH

2/20/14

**Patent Series**  
**Patent Application Files**

Folio # 988      Catch

U.S. Patent #:    1290254

Primary Applicant: Lewis, Frank D

Date Executed:    5/28/1914

Mr. E.

Kutcher

Yes G

I understand the Columbia  
Plum Co. have gotten wind of  
this improvement and are  
having cabinets made up with  
the stay rod exactly like this.  
Don't for want to chase  
patent with the office on this  
right away?

It seems an excellent  
design.

MRK

4/21/14

4/29/14

Mr Hutchison:-

This is a sketch of  
cabinet cover catch which I  
believe Mr Edison has seen.

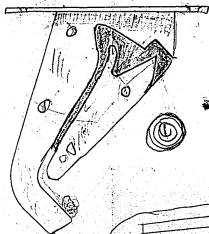
Kindly have Mr Edison C. H.  
this.

J. A. Brophy

Brophy  
It has been "yes"  
OK'd by his  
on number 2017  
from desk

Full legal dept  
Mr Sampson  
this is not  
an office  
note

7.988



OK



Columbian Wash

Stay Area Catch

Recessions  
from Choice

June 29/14

Check this line  
and see if you can  
find the same  
Pile of the same  
material in the  
apartment

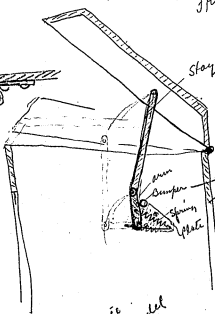
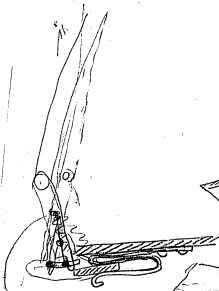
Rec'd from June  
20/14  
G.B.

THOMAS A. EDISON, Incorporated

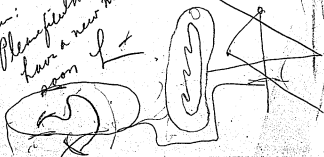
*Original Model  
burned in fire Nov 9 1914*

*A. Frank Phelps  
Apr. 26 1915*

*Explained to  
me on Apr. 29, 1915  
Wm. A. Hardy.*



*Richman:  
Please find me  
how a new model  
can be*



**Patent Series**  
**Patent Application Files**

Folio # 990      Speaking-Tube Support for Phonographs

U.S. Patent #:    1297466

Primary Applicant: Holland, Newman H

Date Executed:   7/10/1914



~~Propley~~

4/29/14

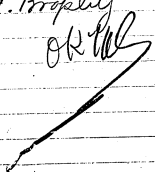
Mr Hutchison:

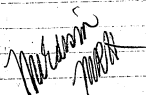
In this device for  
business phones. when the  
speaker tube is lifted by the  
operator the motor starting  
switch is automatically closed  
and the motor started.

Mr. Hurand thinks this is  
good.

Kindly have Mr Edison  
O.K. - this.

J.A. Propley

OK 



5/11/4

1

## Speaker Tube Support

The invention consists of a speaker tube supporting arm a hinged in a bracket B said bracket being positioned under the name plate of a business phone as shown in fig. 1. Bracket is provided with two holes <sup>4</sup><sup>D</sup> to accommodate the two screws common to phones of this type also a larger central hole E through which the start and stop button projects. A slide F straddles the two arms of bracket A & is slidable along same.

In operation the slide F engages the start & stop button H and the speaker tube rests in the loop of arm A as shown in fig. 2. When speaker tube G is removed from loop H the arm a is lifted <sup>to position 1 fig 2</sup> manually which raises the start & stop button G thus closing the circuit through the switch H. When through talking the tube G is placed in loop H & drawn down thus opening circuit through switch.

Fig. 5 shows a modification in the form of a spring which when tube G is raised carries the arm A up with it & closes the switch. When tube is replaced

2.

in loop of arm A & drawn down  
switch is opened & motor shut off.

Fig 6 is a modification having  
a loop as shown. The operator is  
removing the tube G would swing  
same toward the dotted line position  
when tube would strike the interfering  
offset bend. A further upward movement  
of tube G would raise the start & stop  
button & start the motor. The motor  
being shut off by replacing tube in  
loop and pressing downward as  
before.

J. A. Brophy

**Patent Series**  
**Patent Application Files**

Folio # 991      Phonograph

U.S. Patent #:    1178014

Primary Applicant: Holland, Newman H

Date Executed:    7/10/1914

4/24/14

## Improvement in Phonograph Repeat device

This is an improvement in the co-pending application and consists of a pivoted gravity weight pivoted on a lug on a shaft rigidly secured in the feed arm of a phonograph.

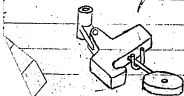
In back spacing or repeating it is ~~sometimes~~ happens that the forwardly projecting pin <sup>which is fast in the weighted</sup> ~~weight arm and~~ <sup>one end of</sup> ~~which~~ <sup>as</sup> lies in the U shaped loop of the locking ring will not center itself in the U loop and will remain in the position shown in dotted lines in fig 5. This tends to prevent a flexible movement of the stylus. To avoid this I mount a gravity weight as shown which normally rests against the stop pin by gravity. When the feed arm moves back or repeats the sudden stopping of feed arm will cause the pivoted or gravity weight to move forward and enter the projecting pin of weight arm. The forward movement of gravity arm is limited by the side of U shaped loop. The gravity arm returns to normal position against its ~~stop~~ stop by gravity.

4/29/44

Mr Hutchinson:

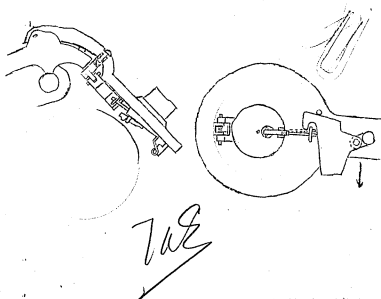
In repeating or back spacing on business forms the stylus does not always always center itself in the U shaped loop and rests against the side, this detracts from the flexibility of the stylus arm. To avoid this Mr Holland has a pivoted gravity weight used in conjunction with a repeat device.

In operation the forwardly projecting pin on the stylus weight is struck lightly by the pivoted weight and drawn to the center of U shaped loop every time the machine repeats or back spaces.



J. A. Propoy

Kindly have Mr Edmund  
O.K. this.



**Patent Series**

**Patent Application Files**

Folio # 993      Phonographs

Serial #:            853283

Primary Applicant: Edison, Thomas A

Date Executed:    7/24/1914



Folio No. 993Serial No. 853, 283

Applicant.

Address.

Thomas A. EdisonTitle PhonographsFiled July 27, 1914

Examiner's Room No. \_\_\_\_\_

Assignee \_\_\_\_\_

Ass'g't Exec. \_\_\_\_\_

Recorded \_\_\_\_\_

Liber \_\_\_\_\_

Page \_\_\_\_\_

Patent No. Abandoned Issued \_\_\_\_\_

## ACTIONS.

1. Rejected Oct. 14, 1914 16 Hearing postponed to Sept 23, 1915
2. Amended Sept. 16, 1915 17 Hearing Sept 23, 1915
3. Rejected Sept. 25, 1915 18 Adverse decision - Sept 24, 1918
4. Amended April 12, 1916 19 \_\_\_\_\_
5. Final Rejection April 25, 1916 20 Abandoned upon instructions
6. Appeal to Examiners in Chief 21 from Mr. Edison 10/16/18
7. April 23, 1917 22 \_\_\_\_\_
8. Examiner's Answer May 1, 1917 23 \_\_\_\_\_
9. Hearing - July 18, 1917 24 \_\_\_\_\_
10. Amended - July 19, 1917 25 \_\_\_\_\_
11. Amended July 20, 1917 26 \_\_\_\_\_
12. Adverse decision Aug 3, 1917 27 \_\_\_\_\_
13. Appeal to Commissioner 28 \_\_\_\_\_
14. July 26, 1919 29 \_\_\_\_\_
15. Hearing - Aug 26, 1919 - 10 a.m. 30 \_\_\_\_\_

DYER & HOLDEN,  
 ORANGE, NEW JERSEY.

# Petition.

To the Commissioner of Patents:

Your Petitioner THOMAS A. EDISON  
a citizen of the United States, residing and having a Post Office address at  
Llewellyn Park, West Orange, Essex County, New Jersey

prays that letters patent may be granted to him for the improvements in

## PHONOGRAPHS

set forth in the annexed specification; and he hereby appoints Byer & Holden,  
(Registration No. 3244), a firm composed of Frank E. Byer and Belos  
Holden, whose address is Edison Office Building, Orange, New Jersey, his  
attorneys with full power of substitution and revocation, to prosecute his  
application, to make alterations and amendments therein, to receive the patent,  
and to transact all business in the Patent Office connected therewith.

*Thos. A. Edison.*

# SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States and a resident of Llewellyn Park, West Orange, Essex County, New Jersey, have invented certain new and useful improvements in PHONOGRAPHS, of which the following is a description:-

This application is a division of my application Serial No. 551,128, filed March 23, 1910. - 4,041, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

My invention relates to phonographs, and more particularly to reproducing styluses formed of extremely hard material such as diamond, which styluses are capable of operating upon records of very hard materials without wearing away or otherwise deteriorating. The principal objects of my invention are the production of such a stylus and an improved holder-combined therewith, as articles of manufacture, and the combination of the same with a suitable reproducer which is given a considerable weight, sufficient to hold the stylus firmly in contact with the record surface at all times, and also in combination with a record formed of material of such excessive hardness as to withstand the wearing action of the stylus and having formed thereon a record groove of fine pitch.

Other objects of my invention will appear from the following specification and appended claims.

Diamond has heretofore been mentioned among other materials as suitable for reproducing styluses, but this has been a mere suggestion that in view of the exceeding hardness of the diamond, it would be of great value as a material from which reproducing styluses might be made. The proper construction of a diamond stylus, or a stylus formed of material substantially harder than sapphire, however, has never been disclosed to my knowledge, nor has such a stylus ever appeared commercially. I have found that an exceedingly hard record material such as that disclosed in applications of Aylsworth, Serial Nos. 496,060, Plastic Composition and Process of Manufacturing the Same, filed May 14, 1909; 543,236, Phenolic Condensation Product and Method of Preparing Same, filed February 11, 1910; and 543,236, Sound Records and Process for Making the Same, filed February 11, 1910, wears away the usual sapphire stylus to a considerable extent. The materials described in these applications are final condensation products of phenol, its homologues or polymers, and formaldehyde or hexa-methylene-tetra-amine or other substance containing the methylene radical  $\text{CH}_2$ , and in their final condition are much harder than celluloid, and in fact nearly approach glass as to their hardness. Such a record material or one of equivalent or great hardness, harder, for example, than celluloid, is of the utmost value for the production of a molded phonograph record, since with a record formed of such material, a reproducer of considerable weight or provided with a heavy floating weight may be used with a consequent considerable improvement in the volume and quality of reproduction, if a stylus of sufficient hardness to withstand

the wear caused by the hardness of the record is used therewith. Furthermore, with a record having an exceedingly fine pitch, it is necessary that the material be very hard in order that the fine walls between the grooves shall not be broken down in reproduction. A sapphire stylus is not appreciably worn when used in reproducing from records, both disc and cylinder, not materially harder than celluloid. When, however, the record material is substantially harder than celluloid, a sapphire stylus quickly wears out, and accordingly I have constructed a stylus which is adapted to coact with such a record and to withstand the consequent wear. It should be noted that as a test, over 300 reproductions were made under my direction with a reproducer weighing from 3 to 5 ounces and provided with a stylus such as I will describe, operating upon a record of the type having a vertically undulating groove and formed of a phenolic final condensation product, described in the above mentioned applications of Aylsworth, compounded with finely divided wood pulp. This test resulted in no appreciable wear, either of the record surface or of the stylus.

Reference is hereby made to the accompanying drawings forming part of this specification, and in which:-

Figure 1 represents in perspective a diamond splint from which my improved stylus is formed;

Figures 2, 3 and 4 are similar views of the splint showing the different stages of operation in the shaping of the reproducing point thereon;

Figure 5 is a diagrammatic view showing the method of lepping the end of the splint to a flat surface, which is preferably the first step in the process of forming my improved stylus;

Figure 6 is a diagrammatic side elevation partly in cross section showing the method of holding the splint and lepping or grinding a taper upon the end thereof;

Figure 7 is a partial plan view of suitable apparatus for rounding the end of the splint;

Figure 8 is an enlarged fragmental cross sectional view through the splint and grinding tool as shown in Figure 7;

Figure 9 is a partial cross sectional view through a reproducer provided with my improved stylus traveling in the record groove of a suitable sound record formed of hard material such as described above; and

Figures 10 and 11 are side elevations of the splint in rough and finished condition respectively, entirely enclosed within a holder of soft metal, illustrating steps in the production of a modified form of stylus and holder therefor.

Referring to the drawings, my improved stylus is preferably formed from a diamond splint, such as indicated at 1. Splints such as that illustrated and of suitable size may be obtained in the market, or they may be prepared by first cleaving a diamond into flat plates and then notching these plates with diamond dust and breaking the same into splints. Such splints are of various shapes and are more or less irregular and rough in appearance. In the formation of a stylus from such a splint, I prepare only one end of the splint, since the roughness and irregularity of the body of the splint are really advantageous, since they aid in firmly holding the splint in its holder both during the formation of the stylus and when mounted in the stylus lever after the stylus is completed.

Having obtained the splint, I preferably first grind the end thereof to a flat surface by means of a revolving lap wheel charged with diamond dust. In Figure 5 I have illustrated diagrammatically a lap wheel 2 which revolves about spindle 3, and being charged with diamond dust upon its surface 4, grinds the flat surface 5 upon the end of splint 1, as indicated in Figure 2. During this operation, the splints may be secured in a suitable holder. Having ground the flat surface 5 upon the end of the splint, the next operation is grinding the sides of the splint adjacent to the flat end 5 to a taper, resulting in the production of a conical surface 6 upon the end of the splint, as shown in Figure 3. The splint 1 may be secured in a suitable holder 7 of brass or other suitable material by cement, which holder is chucked in a lathe such as indicated in Figure 6, in which the spindle 8 is rotated by means of a belt passing over wheel 9, or by other power connection. While the splint 1 is being rotated, it is ground at a suitable angle, preferably of approximately 30 degrees by means of the lap wheel 10, which is charged with diamond dust and mounted upon shaft 11, which may be adjusted at any suitable angle and rotated by any suitable means indicated diagrammatically by the belt wheel 12. If desired, the two steps just described may be transposed, and the sides of the splint adjacent to the end first ground to a taper and the rough end surface remaining then flattened. Or if the end of the splint is sufficiently regular, it may not be necessary to flatten the end at all, and the same may be left rough. After the end portion of

the splint has been reduced sufficiently so that the point or flat surface 5 is of sufficiently small area, the latter is rounded and polished by any suitable means, such as the ball polishing machine shown diagrammatically in Figure 7. As here shown the splint 1 secured in a holder such as 7 is chucked in a lathe having a rotating spindle such as 8. The end of the splint 1 is rounded and polished by means of the grinding tool 13 which is provided with a concave surface of the shape and size to which it is desired to round the end of the splint. The grinding surface of the tool 13 may be charged with diamond dust mixed with oil, as indicated in Figure 8 at 14. Either the splint or the tool grinding the same should partake of an oscillatory movement during the rotation of the splint. In the drawings, I have illustrated the grinding tool 13 as suitably mounted in a spindle 15, which is revolved by means of belt wheel 16, the spindle and belt <sup>being</sup> mounted in any suitable manner for pivotal movement about a vertical axis passing directly through the end of the splint being rounded, so that during the grinding operation, the spindle 15 may oscillate about the surface being ground, as indicated by the positions of the spindle 15 shown in dotted lines in Figure 7. The end of the stylus when rounded is shown in Figure 4 at 19, the said figure representing the completed stylus. The curve 19 should be of the proper dimensions to travel within the exceedingly minute sound record groove, the conical surface 6 of the splint preferably running smoothly into the curve 19 of the record-engaging surface of the stylus. In the case of a vertically undulating record having 150 threads to the inch, I have found that a stylus in which the curve 19 has a diameter of .008 inch gives good results.



In making the modification shown in completed form in Figure 11, the entire splint is first enclosed in a holder of brass or other soft material, and the splint enclosed in the holder is then subjected to the same grinding operations as described above, where the splint was illustrated as projecting from the holder. In these grinding operations the portions of the holder adjacent the splint are also ground away, the holder protecting the splint against breakage during the operations in the same manner as the wood of a lead pencil protects the lead in sharpening the pencil. This is of value since otherwise the splint is likely to be broken during grinding. In Figure 10 I have illustrated the splint 1 entirely enclosed within holder 7 and held therein by cement 7'. The lower end of the holder and splint shown in Figure 10 is ground flat, if necessary, and the sides of the holder and the enclosed splint ground to a taper and the end of the splint rounded in the holder as shown in Figure 11.

The methods of forming styluses as above described give them great strength and seem to be the only practical methods of shaping them without having recourse to a large amount of grinding, which results in a loss of strength. A stylus so formed is adapted to track either a disk or a cylindrical record. In Figure 9, I have illustrated a stylus 1 and its holder mounted in and connected by lever 20, pivoted at 21, to diaphragm 22 of a reproducer 23. This reproducer is preferably of considerable weight, as, for example, from 3 to 5 ounces or more, which weight holds stylus 1 firmly in engagement with the record grooves of record 24, which is preferably formed of the final phenolic

condensation product above referred to.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:

1. As a new article of manufacture, a diamond stylus having a conical end with rounded point adapted to travel in the groove of a sound record, substantially as described.

2. As a new article of manufacture, a diamond stylus having irregular unfinished surfaces and a lepped tapered end with rounded point adapted to travel in the groove of a sound record, substantially as described.

3. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of very hard material substantially enclosed within said holder, the ends of the holder and enclosed stylus being cone-shaped, and the point of the stylus being rounded, substantially as described.

4. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the ends of the holder and enclosed stylus being cone-shaped, and the point of the stylus being rounded, substantially as described.

5. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of very hard material substantially enclosed within said holder, the ends of the holder and enclosed stylus being cone-shaped, the point of the stylus being rounded, and the stylus being provided, at that portion thereof within the holder, with irregular unfinished surfaces, substantially as described.

6. In apparatus of the character described, the combination with a sound record formed of a material

*Cancelled 4-12-16*

2 sufficiently hard to appreciably wear a sapphire stylus tracking the same, and having a spiral record groove of fine pitch formed thereon, of a stylus formed of material substantially harder than sapphire shaped to track the record groove, substantially as described.

5.  
7. In apparatus of the character described, the combination with a sound record formed of a material appreciably harder than celluloid, and having a vertically undulating sound record groove formed thereon, of a stylus formed of material substantially harder than sapphire shaped to track the record groove, and a reproducer carrying the said stylus, having a diaphragm connected therewith and sufficiently weighted to hold the stylus in firm engagement with the record throughout the reproduction, substantially as described.

*Invent C - Claim 1 - 7/14/17*  
*" C - Claim 3 - 7/14/17*

This specification signed and witnessed this 24<sup>th</sup> day of July 1914

Thos. A. Edison

Witnesseth:

1. William C. Hardy
2. Frederick Bachmann

## Oath.

State of New Jersey }  
County of Essex } ss.,

THOMAS A. EDISON, the above named  
petitioner, being duly sworn, deposes and says that he is a citizen of the United  
States, and a resident of Llewellyn Park, West Orange, Essex County,  
New Jersey

that he verily believes himself to be the original, first and sole inventor of the  
improvements in

### PHONOGRAPHS

described and claimed in the annexed specification; that he does not know and  
does not believe that the same was ever known or used before his invention or  
discovery thereof; or patented or described in any printed publication in the  
United States of America or any foreign country before his invention or  
discovery thereof, or more than two years prior to this application; or patented  
in any country foreign to the United States on an application filed more than  
twelve months prior to this application; or in public use or on sale in the  
United States for more than two years prior to this application; and that no  
application for patent upon said invention has been filed by him or his legal  
representatives or assigns in any foreign country.

Thos. A. Edison

Sworn to and subscribed before me this 24<sup>th</sup> day of July 1914

Frederick Bachmann

Notary Public.

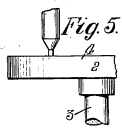
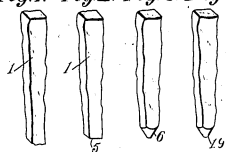
[Seal]

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Suit

853 283

Fig. 1. Fig. 2. Fig. 3. Fig. 4.



140  
8  
(11)

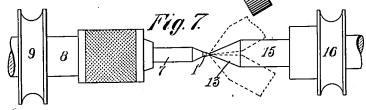
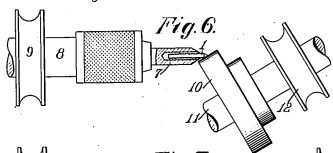


Fig. 10. Fig. 11.

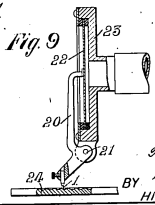
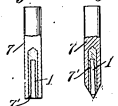


Fig. 8.



WITNESSES:  
J. A. Prophy  
William A. Hardy

INVENTOR  
Thomas A. Edison  
By *Dyer & Holden*  
HIS ATTORNEYS

Div. 25 Room 379

2-200

Paper No. 2

Address only  
"The Commissioner of Patents,  
Washington, D. C."  
and not any official by name.

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
names of the applicant.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

ICE-34

WASHINGTON

Oct. 14, 1914.

Dyer and Holden,

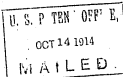
Edison Office Building,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, for Phonographs, filed July 27, 1914, Serial

No. 853,283.



Thomas Ewing  
Commissioner of Patents.

19-201

Page 1, line 15, "articles" should be -an article-.

Page 6, line 18, "vertical" is horizontal on the drawing.

Claim 1 is rejected as specifying nothing patentable over  
Jungbecker, English, 12,456, May 31, 1902, (181-11), 1 sheet,  
Desold, 19,225, Aug. 12, 1907, " no draw-  
Rosenthal, German, 87,394, June 26, 1896, (181-5), 1 sheet.

If the cited styl are not rounded on the end, no invention would reside  
in making them so. See r in Fig. 7 of

Bruening, 462,687, Nov. 10, 1891, (181-5).

Claim 2 is rejected upon the above references. The use of  
the roughened sides of the splint is not thought to involve more than  
workshop expediency.

Claims 3 and 4 are rejected on Jungbecker with the holder of  
metal, as in Desold.

Claim 5 is also rejected as not patentably distinguished from  
Emerson, 736,948, Aug. 25, 1903, (181-11).

Claim 6, line 6, "or" should be -on-.

Claim 6 is rejected on Jungbecker, for the reasons last given  
in connection with those given in the rejection of claim 2.

Claims 6 and 7 are rejected as aggregations of the stylus and  
the record. No novel cooperative function is found in the assemblage  
claimed.

*shown in drawing*  
 Claim 6, line 4, "having ----- groove" is objected to as not shown on the drawing, as required by rule 50.

Claim 6 is also rejected on

Meyers, 866,950, Sept. 24, 1907, (181-11);

also as specifying no more than the record of

Comolly, 749,030, Jan. 5, 1904, (181-16);

used with any of the above cited styli.

Claim 7 is also rejected as specifying no more than the conventional shellac composition gramophone record reproduced by any such styli as in references above in the ordinary gramophone to be found on the market; also as not patentable to use an old record as in Comolly, cited, with an old stylus, as in references cited, with any conventional weighted sound box, as illustrated in

Tanner, 908,625, Jan. 5, 1909, (181-11).

It is not believed that it involves invention to use a hard stylus with hard record material, if a soft stylus will wear. The ordinary reproducer of the conventional gramophone has the characteristics called for by claim 7. Moreover, to increase the weight of the reproducer is but a change in degree producing a perfectly well known result.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHS

Room No. 379.

Filed July 27, 1914

Serial No. 853,283

HONORABLE COMMISSIONER OF PATENTS,

S I R :

In response to the Office action of October 14, 1914, please amend the above entitled case as follows:-

Page 1, line 15, cancel "articles" and insert - an article - .

Page 6, line 17, after "belt" insert - wheel - .

Page 7, line 29, change "or" to - of - .

Cancel claims 1 and 2.

Claim 3, line 4, change "end" to - ends - . Line 5, cancel "cone-shaped" and insert - jointly formed into a single cone portion having a continuous conical surface - .

Claim 4, line 4, change "end" to - ends - . Same line, cancel "cone-shaped" and insert - jointly formed into a single cone portion having a continuous conical surface - .

Claim 5, line 4, change "end" to - ends - . Line 5, cancel "cone-shaped" and insert - jointly formed into a single cone portion having a continuous conical surface - . Line 6, change "or" to - on - .

Claim 6, line 4, cancel "spiral".



Renumber claims 3 to 7 inclusive as 1 to 5 inclusive respectively.

#### R E M A R K S

Claims 1, 2 and 3, former claims 3, 4 and 5, as amended, clearly distinguish from Jungbecker, Dowd and Emerson by specifying that the ends of the holder and enclosed stylus are jointly formed into a single cone portion having a continuous conical surface. The article as described in these claims may be economically manufactured with but slight risk of breaking the stylus, when formed of a hard brittle material such as a small diamond splint. Moreover, the construction described in these claims is advantageous, especially in the case of a diamond stylus, in that the holder protects the stylus against breakage in the same manner as the wood of a lead pencil protects the lead point.

With reference to claims 4 and 5, former claims 6 and 7, it is submitted that the same cover true combinations of elements assembled in such a manner as to have a co-operative function, namely, the faithful tracking of the record groove so that all overtones will be reproduced and without appreciable wear either of the stylus or the record. None of the references of record discloses the novel combinations described in these claims, and it is impossible to secure with the apparatus disclosed in any of these references the same quality of reproduction as is possible with the use of applicant's invention. It is well settled that a new combination of elements which

secures an improved result, even where the elements themselves are old, is patentable. Patent No. 866,950 to Meyers does not disclose a sound record formed of a material sufficiently hard to appreciably wear a sapphire stylus tracking the same, while patent No. 749,030 to Connolly fails to suggest the use of a stylus formed of material substantially harder than sapphire.

It is thought that the word "vertical" is correctly used in line 18, page 6. In this connection the Examiner's attention is directed to the fact that Figure 7 is a plan view. (See Line 5, page 4).

For the above reasons, reconsideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By Dyer and Holden

His Attorneys

Orange, N. J.

September 16, 1915

WH-JS

Div. 23 Room 379

Admission only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-200

Paper No. 4

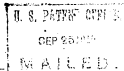
All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

CCP  
DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON Sept. 25, 1915.

Dyer &amp; Holden,

Edison Office Bldg.,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of the application of

Thomas A. Edison, Serial No. 653,293, Filed July 27, 1914, for  
"PHONOGRAPHS"

c 4-301

Thomas Edison  
Commissioner of Patents.

Although this application falls under Commissioner's order 2185, the amendment of Sept. 17, 1915, has been admitted although it fails to place the case in condition for final action, in order that a further explanation of reasons may be set out. Applicant should however promptly place the case in condition for final action.

Claim 1 is rejected as met squarely in Emerson of record, Fig. 2; also as involving no invention over Jungbecker of record for the reasons of record. It is to be noted that Jungbecker's structure is the same as applicant's modification in Fig. 6 or Figure 9, and must be held the equivalent of the structure otherwise shown.

Claims 2 and 3 are rejected on Jungbecker for the reasons given and as specifying but a substitution of material, of itself no invention, in Emerson. As to the use of unfinished surfaces, this is a very well known expedient. Note for example

McKenna, 136,021, Sept. 23, 1873, 125-Diamond Tools.

Claims 4 and 5 are rejected for lack of novelty in the combination and on the references and for the reasons of record.

It is not believed applicant is entitled to a monopoly of using an old stylus with an old record, both being used as originally contemplated. Both diamond styli and the record used by applicant are admittedly not his invention. It is not believed applicant can monopolize the use of elements not his invention as they were intended to be used without showing some new cooperation. Furthermore, Connelly's record answers the terms of the claim and Myers' stylus as well as the various diamond styli answer the terms of the claim. As to claim 7 the type of record groove employed and the weight of the reproducer used is not seen more than a selection from the prior art without the production of anything unobvious.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHS

Room No. 379.

Filed July 27, 1914

Serial No. 853,283

HONORABLE COMMISSIONER OF PATENTS .

S I R :

In response to the Office action of  
September 25, 1915, please amend the above entitled case  
as follows:-

Claim 1, cancel lines 4 and 5 and substitute -

B  
said holder, the holder and enclosed stylus being provided  
at one end with a cone portion having a smooth continuous  
conical surface, said surface being formed partly on said  
holder and partly on said stylus, - .

Claim 2, cancel lines 4, 5 and 6 and substitute -

B<sup>1</sup>  
the holder and enclosed stylus being provided at one end  
with a cone portion having a rounded point, and a smooth  
continuous conical surface, said surface being formed partly  
on said holder and partly on said stylus, substantially as  
described. - .

Claim 3, cancel lines 4 to 8 inclusive and sub-

B<sup>2</sup>  
stitute - said holder, the holder and enclosed stylus being  
provided at one end with a cone portion having a smooth  
continuous conical surface, said surface being formed partly  
on said holder and partly on said stylus, and that portion  
of the stylus within the holder being irregular and unfin-  
ished, substantially as described. - .

Cancel claims 4 and 5.

R E M A R K S

It is submitted that the three claims now contained in this application clearly and patentably distinguish from the references of record. Each of these claims differentiates from Emerson and Jungbecker by specifying that the stylus holder and the stylus enclosed therein are provided at one end with a cone portion having a smooth continuous conical surface, which surface is formed partly on the holder and partly on the stylus. In the device shown in Figure 2 of the patent to Emerson, the stylus g is formed of cylindrical steel wire of uniform diameter approximating the width of the record groove and having its lower end shaped to fit the record groove, as clearly shown in Figure 4 of this patent. No part of the conical surface of the lower end portion of the stylus disclosed by Emerson is formed on the wire or core g. In this connection, the Examiner's attention is directed to lines 60 to 69, page 1, and lines 30 to 37 and 48 to 52, page 2 of the specification of the Emerson patent.

In the device disclosed in the patent to Jungbecker, the cylindrical body portion of the stylus projects outwardly a considerable distance beyond the end of the stylus holder. While the device disclosed by Jungbecker is somewhat similar to applicant's modification shown in Figures 6 and 9, it is submitted that such device is not the equivalent of the structure described in the claims now under consideration. The fact that a patent applica-

tion discloses several modifications of an invention does not constitute grounds for holding these modifications to be equivalents. . In the present case it is submitted that the stylus shown in Figures 6 and 9 is not the equivalent of the stylus shown in Figure 11 and that the structure shown in the latter figure has certain advantages over that shown in Figures 6 and 9 which have been repeatedly pointed out in the remarks accompanying previous amendments, and which are clearly described on page 7 of the specification. In this connection, the Examiner's attention is directed to the fact that these very advantages convinced the Examiner that the claims in applicant's prior case referred to on page 1 of the specification were patentable.

In view of the above, further consideration and allowance are requested.

Respectfully submitted,

THOMAS A. EDISON

By

*Dyer and Holden*

His Attorneys

Orange, N. J.

April 12, 1916

WH-JS

Div. 23 Room 379  
Address only  
"The Commissioner of Patents,  
Washington, D. C.,"  
and not any official by name.

2-200

Paper No. 6

All communications respecting this  
application should give the serial number,  
date of filing, title of invention, and  
name of the applicant.

993

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE

F B

WASHINGTON

April 25, 1916.

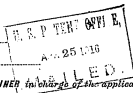
Dyer and Holden

Raison Office Building,

Orange, N. J.

Please find below a communication from the EXAMINER in charge of the application of  
Thomas A. Raison, for Phonographs, filed July 27, 1914, Ser.

No. 853,283.



Thomas Ewing  
Commissioner of Patents.

c 4-2021

In response to amendment of April 13, 1916.

The claims are all rejected on the references and reasons of record. Especial attention is directed to Fig. 1 of the Jungbecker device. It is not believed that there would be invention in making the conical surface a continuous one. The extra added part to the body of the needle would be so small that it would have little strength in supporting the point. Such an expedient is well known, however, as applicant has pointed out by reference to the lead pencil, and its use here would not be invention.

Applicant's patent 1,110,428, of which this is a division and apparently on other features of novelty; vision, was allowed in another division, and therefore applicant's remarks on page 3 of the amendment do not appear to be pertinent.

As a clear issue between applicant and the office appears to have been reached, this action is made final.



IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHS

Room No. 379.

Filed July 27, 1914

Serial No. 853,283

HONORABLE COMMISSIONER OF PATENTS,

S I R :

I hereby appeal to the Examiners-in-Chief from the decision of the Principal Examiner in the matter of my application for Letters Patent for an improvement in Phonographs, filed July 27, 1914, Serial No. 853,283, which, on the 25th day of April, 1916, was rejected for the second time.

The following are the points of the decision on which the appeal is taken:-

The Examiner erred in rejecting claims 1 to 3 inclusive and each of them.

The Examiner erred in not allowing claims 1 to 3 inclusive and each of them.

The Examiner erred in holding claims 1 to 3 inclusive to be without patentable novelty.

An oral hearing is requested.

Signed at West Orange, Essex County, New Jersey  
this 23rd day of April, 1917.

THOMAS A. EDISON

By Dyer and Holden  
His Attorneys

Jul 9 1917

In the United States Patent Office.

In re application #853,283,

Thomas A. Edison,

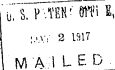
Filed July 27, 1914,

Phonographs.

Before the Hon. Board of  
Examiners-in-Chief.

On Appeal.

-----  
Examiner's Answer.  
-----



This is an appeal from the action of the examiner in finally rejecting all the claims of the case, which claims are:-

1. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of ~~very~~ <sup>hard</sup> material, substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described. *Smith's*
2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a rounded point and a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described. *Smith's*
3. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of <sup>very</sup> hard material, substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, and that portion of the stylus within the holder being irregular and unfinished, substantially as described. *Smith's*

The references relied on are:-

Emerson, 736,948,  
Jungbecker, 12,456, (British), of 1902, and  
Bezold, 18,225, " " 1907, no drawing.

The article in question is a stylus made by mounting a diamond splint in a holder of softer material by means of cement. Then the end is ground off conically, in a manner similar to the sharpening of a lead pencil. This case is a division of patent No. 1,110,428, which covered the method of making.

Emerson, in Fig. 2, shows a stylus point of steel, in a holder of a softer material, such as equal parts of lead and bismuth. This is sharpened very much as a lead pencil is sharpened, and as applicant's is, except that the stylus point is <sup>always</sup> rounded. Now, it has been considered desirable to slightly round the tip of the stylus so that it will not wear the record groove so much, and practically all steel needles on the market today are so rounded, although not readily visible without magnifying means, as the stylus point and record groove are very small. Should it be desired, it is not believed to require invention to provide a strictly conical tip, as it could be sharpened like a lead pencil. Besides, claim 2 calls for a rounded point. As an article it would have no different effect when used (by reason of the change from a slightly rounded tip to a strictly conical tip) with a record, except to probably wear the record more rapidly. It is held that the exact materials used are, <sup>immaterial</sup> as far as the patentability of the article is concerned, just so long as a hard stylus point is held in a soft holder. The use of the diamond stylus point is, of course, old and unpatentable.

Attention is next called to the patent to Jungbecker, who shows a diamond point mounted in a holder of softer material. This is sharpened conically, and the slight shoulder between b and c eliminates so little material that the holding means is not materially weakened. Certainly, it would be obvious to any mechanic to eliminate this shoulder by grinding it off, as one sharpens a lead pencil.

Attention is further called to the British patent to Bezold, which discloses a diamond point set into a steel or other suitable metal holder.

Claim 3 specifies that the part of the diamond within the holder is irregular and unfinished. Bezold states that his

diamond point is undercut to assist in holding it in the holder. It is not believed that to make that part of an object which projects into a holder of irregular outline, to prevent turning and to help hold it in, or to leave it unfinished (to save the cost of finishing) is anything but simple mechanical skill. For example, screw drivers and chisels are usually set into their handles in such a way, and the applicant already has a patent, No. 1,041,983, in which he mounts a boron point in a brass holder in the same manner that the diamond is mounted in this case. The mere substitution of the well known diamond point for the boron point is not considered to be an invention, in view of the state of the art as shown by Jungbecker and Bezold, of record.

*Pat. 1,041,983*

*nothing is new about this*

*1041983*

It is therefore believed that this application comes within the same group as those condemned in *Atlantic Works vs. Brady*, 107 U. S., 192, and that the claims were properly finally rejected.

Respectfully submitted,

May 2, 1917.

Examiner, Div. 23.

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

May 7 , 1917.

Sir:

The case of Thomas A. Edison

Serial No. 853,203 , will be heard by the <sup>Commissioner</sup>  
~~Exfr.~~ Examiners-in-Chief  
on the 18th day of July , 1917.

The hearings will commence at <sup>ten</sup>  
~~one~~ o'clock, and as soon as  
the argument in one case is concluded the succeeding case will  
be taken up.

If any party, or his attorney, shall not appear when the  
case is called, his right to an oral hearing will be regarded  
as waived.

The time allowed for arguments is as follows:

✓ Ex parte cases, thirty minutes;  
Motions, thirty minutes, each side;  
Interference appeals, final hearing, one hour each side.

By special leave, obtained before the argument is commenced,  
the time may be extended.

The appellant shall have the right to open and conclude in  
interference cases, and in such case a full and fair opening  
must be made.

Briefs in interference appeals must be filed in accordance  
with the provisions of Rule 147.

Respectfully,

*Brief due on or before date of  
hearing - July 15, 17*

*Thomas Ewing*  
Commissioner of Patents.

To \_\_\_\_\_

To Messrs. Dyer & Holden, Attys.  
Edison Office Building,  
Orange, N. J.

IN THE UNITED-STATES PATENT OFFICE

Thomas A. Edison	)	
PHONOGRAPHS	)	BEFORE THE HONORABLE BOARD OF
Filed July 27, 1914	)	EXAMINERS-IN-CHIEF
Serial No. 853,283	)	ON APPEAL

APPELLANT'S BRIEF

This is an appeal from the Examiner's final re-  
jection of all the claims in the case, which are as follows:

1. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of very hard material substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.
2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a rounded point and a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.
3. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of very hard material substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, and that portion of the stylus within the holder being irregular and unfinished, substantially as described.

The invention as defined in the appealed claims relates to an article comprising a phonograph stylus formed of very hard material, such as diamond, enclosed within a

holder of comparatively soft material, the holder and enclosed stylus being provided at one end with a smooth continuous conical surface, formed partly on the holder and partly on the stylus.

The distinctive feature of applicant's invention, which feature is clearly set forth in each of the appealed claims, resides in the provision of the holder and enclosed stylus at one end with a cone portion having a continuous conical surface formed partly on the holder and partly on the stylus. This feature is clearly not disclosed in any of the references relied upon by the Examiner, namely:

Emerson, No. 736,948

Jungbecker, No. 12,456 of 1902 (British)

Besold, No. 18,225 of 1907 (British)

The device shown in Figure 2 of Emerson consists of a fine cylindrical steel wire g, forming the stylus, mounted in a holder h of softer material. The steel wire g projects from one end of the holder h and the entire surface of the projecting end thereof is rounded to fit the record groove, the end portion of the holder h being tapered to the rounded end of the wire g. No conical surface is formed on the end of wire g and consequently it is impossible to find in this reference any disclosure of applicant's invention.

Jungbecker discloses a jewel c, preferably diamond, mounted in and projecting from a recess b formed in the free end of a holder a. The body portion of the jewel c projects a considerable distance from the holder a and has the tracking point formed on its outer end, there being

an abrupt shoulder between the projecting portion of the jewel c and the end of the holder a. This structure lacks all the advantages of the applicant's invention.

Bezold does not appear to have any particular bearing on the invention of the appealed claims, this patent disclosing nothing more than a stylus consisting of a diamond point mounted in a hollow steel holder, the diamond point being undercut at its inner end and the material of the holder being pressed into engagement therewith so as to hold such point firmly in position.

As none of the references disclose the claimed structure, the only question to be determined on this appeal is whether applicant's construction as defined in these claims involves invention. It is submitted that it does involve invention for the following reasons:

In addition to being essentially different in construction from Emerson's device, applicant's device is different in its function and in the results obtained through its use by reason of such difference in construction. Emerson did not contemplate providing the cylindrical steel wire g of his device with a conical tip, for he made the same of a uniform diameter substantially equal to the width of the record groove (.005 of an inch), so that no matter how much this wire wore away in tracking the record groove, it would still continue to engage between the side walls of the groove. See lines 29 to 37, page 2 of the Emerson patent. Moreover, this would be undesirable in Emerson's device, as the provision of this wire with such a tip would be detrimental and a step backward, for



the reasons which the Examiner himself has clearly indicated in the first paragraph on page 2 of his statement. Furthermore, in Emerson, the holder h is not provided for the purpose of preventing the breaking of the wire g either during the formation of the tracking end thereof or during its use on a phonograph. The only function of this holder, as is clearly set forth in Emerson's specification, is to lend rigidity to the fine hard steel wire g and to provide a support therefor of such material that when the end of the wire is worn off, the adjacent portion of the holder will also readily be worn off so as to ride on the surface of the record adjacent the record groove without any appreciable grating, scraping or other objectionable noise resulting. In this connection, attention is directed to lines 70 to 79, page 1, and lines 52 to 58, page 2 of Emerson's patent. As Emerson states in lines 64 to 66, page 2, of his patent, it is not necessary that the core (wire g) be imbedded in the center of or be entirely surrounded by the support. Emerson's stylus and support are not sharpened as a lead pencil is sharpened, as specified in the Examiner's statement, the support or covering h being applied to the wire g by dipping the latter into an alloy of lead and bismuth in a liquid molten state, or by molding. See lines 41 to 44, page 2 of Emerson's specification. Applicant's construction for supporting the stylus, as distinguished from that of Emerson, is especially adapted for use with a stylus formed of a very small piece or splint of very hard brittle material, such as diamond, which does not wear in use, to prevent the same

from being broken either during the grinding of the tracking end portion thereof or from its use on a phonograph.

With reference to Jungbecker's device, the Examiner states that the shoulder between members b and c eliminates so little material that the holding means is not materially weakened. This, it is submitted, is not the case, for Jungbecker's diamond stylus mounted as shown, could neither be ground nor used on a phonograph without incurring serious danger of breaking the stylus. Applicant's device is designed to overcome the very faults present in Jungbecker's construction.

It is believed that applicant's device as defined in the appealed claims patentably distinguishes from both Emerson and Jungbecker, and comes within the ruling in the case of Gunn et al. vs. Bridgeport Brass Co., 138 F. 239, in which the Court held:

"A patent is not anticipated by the devices of prior patents which could have been easily modified to attain the result of the patentee where it does not appear that the prior patentees had in mind the adoption or use of their inventions to the accomplishment of a similar function."

It is not deemed necessary to discuss the patent to Besold, as applicant is not relying on the fact that the portion of the stylus within the holder is irregular or unfinished to confer patentability on any of the appealed claims.

The position taken by the Examiner on page 3 of his statement, that applicant's device does not involve invention over his patent No. 1,041,983 in view of the state

of the art as shown by Jungbecker and Bezold, is not well founded because of the fact that the filing date of the application which results<sup>ed</sup> in said patent No. 1,041,983 is subsequent to the effective filing date of the present application. Furthermore all of the claims of said patent are directed toward the stylus alone of a particular material and none of them toward the combination of a stylus and a holder so that the question of double patenting cannot arise.

The Examiner contends that this application comes within the same class of cases as those condemned in Atlantic Works vs. Brady, 107 U.S. 192, which was a suit for infringement of a patent to Brady covering a dredge boat. The Court held that this patent was invalid for want of novelty and invention. The testimony in this case showed that it had been common to employ the stern propellers of a dredge boat as dredging screws by running the boat stern foremost into the mud bank to be dredged. The most that Brady did was to dispose the dredging screw in the stem or prow of the dredge boat, although the testimony showed that it was doubtful if even this idea originated with Brady. Moreover the disposition of the dredging screw in a different part of the boat was accompanied with no change in the operation or the results accomplished. Applicant, on the other hand, has made a decided step in advance, as his invention has rendered practicable the formation and use of phonograph styli of very hard and brittle material such as diamond. As brought out in applicant's specification, styli formed as shown in Figure 11 of the drawing are of

great strength and the formation of styli in any other way would involve a large amount of grinding and a loss of strength with a resulting increase in time, labor and expense and the production of inferior articles. While it has long been recognized that in view of the exceeding hardness of diamond it would be of great value as a material from which reproducing styli might be made, the proper construction of a stylus formed of material substantially harder than sapphire has never before been disclosed to applicant's knowledge,<sup>nor</sup> prior to applicant's invention, has such a stylus ever appeared commercially. While the differences between the devices of the prior art and applicant's device may at first appear to be slight, these differences render applicant's device a practical success and, it is contended, confer patentability thereon. In this connection, attention is directed to the following extract from the decision in the case of *In Re Harbeck*, 191 O. G. 596:

"It is easy to dispose of a case, where the issue of invention is close, by holding that the advance over the prior art constitutes a mere mechanical change apparent to those skilled in the art. But, in the absence of proof to support this conclusion, and where the question of patentability is close, the doubt should be resolved in favor of the applicant."

In view of the decided advantages and improved results obtained by applicant's construction as defined in the appealed claims, it is submitted that the present application comes within the ruling in the case of *General Electric Company vs. Hill Wright Electric Company*, 174 Fed.

996-998, rather than under the ruling of Atlantic Works vs. Brady. In the former decision the Court stated:

"Although a device or process may seem very simple, where it appears that it resulted in a saving of time, material and the use of skilled labor, and that it made a better and cheaper article and more of them, patentable novelty is sufficiently shown".

In his statement the Examiner calls attention to the fact that this application is a division of patent No. 1,110,428 which covers the method of making the article. This is true, and in this connection attention is called to the fact that unless the appealed claims are allowed, applicant will have no recourse whatever against users and sellers of articles constructed in accordance with his invention.

For the above reasons, the appealed claims are thought to be patentable and the Honorable Examiners in Chief are accordingly requested to so adjudge them in their decision.

Respectfully submitted,

THOMAS A. EDISON

By Dyer and Holden  
His Attorneys

Orange, N. J.,

July 17, 1917.

IN THE UNITED STATES PATENT OFFICE.

Thomas A. Edison,  
PHONOGRAPHS,  
Filed July 27, 1914,  
Serial No. 853,283.

-----000-----

Hon. Commissioner of Patents,

Sir:

Please amend the above entitled application as follows:

Cancel claims 1 and 3 and substitute therefor the following claims:

1. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of brittle material substantially harder than sapphire substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.

2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of brittle material substantially harder than sapphire substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface

being formed partly on said holder and partly on said stylus,  
and that portion of the stylus within the holder being irregular and unfinished, substantially as described.

---

R E M A R K S.

In accordance with the understanding with the Honorable Board of Examiners-in-Chief at the hearing of July 18, 1917, on the appeal from the Examiner's final rejection of claims 1 and 3, this amendment is submitted for the purpose of presenting claims 1 and 3 in such form as to clearly distinguish from the references relied upon by the Examiner in his final rejection.

It is accordingly requested that this amendment be entered and the application allowed.

Respectfully submitted,

THOMAS A. EDISON,

By Dyer and Holden  
His Attorneys.

Washington, D.C.

July 19, 1917.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHS

Filed July 27, 1914

Room No. 379.

Serial No. 853,283

HONORABLE COMMISSIONER OF PATENTS,

S I R :

Please amend the above entitled case as follows:-

Renumber claim 2 presented in the amendment filed with the Honorable Board of Examiners-in-Chief on July 19, 1917 as claim 3.

R E M A R K S

The second claim presented in the amendment filed July 19, 1917 with the Honorable Board of Examiners-in-Chief was inadvertently numbered 2, and the present amendment is filed merely to rectify this mistake.

Very respectfully,

THOMAS A. EDISON

By *Oyer and Hiden*  
His Attorneys

Orange, N. J.

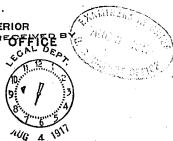
July 20, 1917

WH-JS



2-202

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON



Sir:

Inclosed find copy of decision this day rendered by the

Examiners in Chief in the ex parte case of                       
                    

Thomas A. Edison, Serial No. 858,283.

By direction of the Commissioner:

Very respectfully,

*W. F. Woolard,*  
Chief Clerk.

Messrs. Dyer & Holden,

Edison Office Building,

Orange, N. J.

IAD

Hearing:  
July 18, 1917.

RECEIVED BY



Appeal No. 1316. U. S. Patent Office. August 3, 1917.

Before the Examiners-in-Chief, on Appeal.

Application of Thomas A. Edison for a patent for an improvement in Phonographs, filed July 27, 1914, Serial No. 853,283.

Messrs. Dyer and Holden, attorneys for appellant.

This is an appeal from the final rejection of claims 1 to 3. At the hearing it was suggested that claims 1 and 3 did not bring out the fact that applicant was working with a brittle, hard material with which the soft material in conical form especially coats, and applicant has rewritten claims 1 and 3 to include this feature, and we have considered them as amended.

Appealed claim 2 is as follows:

2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a rounded point and a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.

The references are:

Emerson,	736,948,	Aug. 25, 1903.
Jungbecker, British,	12,456,	May 31, 1902.
Besold,	18,225,	Aug. 12, 1907.

The phonograph stylus covered by the claims is specified as having a "rounded point" and a conical surface which merges into the conical surface of the soft material of the holder.

#1316--2.

The stylus point being of hard material and brittle, and yet having to be accurately ground by special tools, under considerable strain, to a shape to fit the minute sound record groove indentations, the hard brittle point should be protected as much as possible, and the soft metal holder is therefore shaped to terminate in a cone which for the best results merges into the cone shaped end of the stylus, thus giving the maximum amount of protection for the minimum amount of surrounded material, much on the principle of the protection given the lead of an ordinary lead pencil by the surrounding wooden body.

Emerson shows a stylus comprising a hard material g surrounded by a softer material, but the conical surface of the hard point, if indeed it is conical at all, does not merge into the conical surface of the surrounding holder as fully shown in Figs. 2 and 4.

Nor does the Jungbecker outside holder have a conical surface merging into the conical surface of the stylus c., as shown in Jungbecker's Figs. 1 and 2, but they practically merge and we can see nothing patentable in making them merge exactly, especially in view of the every day practice of so sharpening lead pencils that the cone part of the wood merges into the cone part of the brittle lead and for the same purpose that applicant's cone stylus merges into his cone of softer metal, viz., to get the maximum amount of protection for the minimum amount of surrounding material, and the final rejection of the claims is affirmed.

J. T. Newton

Frank C. Skinner

S. E. Fouts

Examiners-in-Chief.

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison

PHONOGRAPHS

Filed July 27, 1914

Serial No. 853,283

HONORABLE COMMISSIONER OF PATENTS,

S I R :

I hereby appeal to the Commissioner in person from the decision of the Examiners-in-Chief in the matter of my application for Letters Patent for an improvement in Phonographs, filed July 27, 1914, Serial No. 853,283.

The following are assigned as reasons of appeal:

The Examiners-in-Chief erred in affirming the final rejection of claims 1 to 3 and each of them.

The Examiners-in-Chief erred in not holding claims 1 to 3 and each of them to be allowable.

The Examiners-in-Chief erred in holding that the conical surfaces of the holder and stylus c of the device shown in Figures 1 and 2 of British patent to Jungbecker No. 12456 of May 31, 1902, practically merge.

The Examiners-in-Chief erred in not holding claims 1 to 3 and each of them patentable over the disclosure in British patent to Jungbecker No. 12456 of May 31, 1902.

An oral hearing is requested.

Signed at West Orange, Essex County, New Jersey  
this 26<sup>th</sup> day of July, 1918.

THOMAS A. EDISON

By

*Dyer and Holden*  
His Attorneys

ADDRESS ONLY  
THE COMMISSIONER OF PATENTS,  
WASHINGTON, D. C.

2-301

Paper No.

REG

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

Sept. 18, 1918

Sir:

The case of Thomas A. Edison )  
Phonographs. ) Appeal to  
Commissioner.

Serial No. 853,283, will be heard by the { Commissioner  
~~Examiner~~ } ~~Examiner-in-Chief~~  
on the 23rd day of September, 1918, at 10 A. M.

The hearings will commence at {ten  
~~ten~~} o'clock, and as soon as  
the argument in one case is concluded the succeeding case will  
be taken up.

If any party, or his attorney, shall not appear when the  
case is called, his right to an oral hearing will be regarded  
as waived.

The time allowed for arguments is as follows:

Ex parte cases, thirty minutes;  
Motions, thirty minutes, each side;  
Interference appeals, final hearing, one hour each side.

By special leave, obtained before the argument is commenced,  
the time may be extended.

The appellant shall have the right to open and conclude in  
interference cases, and in such case a full and fair opening  
must be made.

Briefs in interference appeals must be filed in accordance  
with the provisions of Rule ~~143~~ 144.

Respectfully,

*J. S. Newton*  
*John S. Newton*  
Commissioner of Patents.

To N.B.--This hearing will be held  
before Mr. Clay.

To Dyer and Holden  
Edison Office Bldg.

Orange, N. J.

2-182

IN THE UNITED STATES PATENT OFFICE

Thomas A. Edison )  
PHONOGRAPHS ) BEFORE THE HONORABLE COMMISSIONER  
Filed July 27, 1914 ) OF PATENTS ON APPEAL  
Serial No. 855,283 )

APPELLANT'S BRIEF

This is an appeal from the decision of the Examiners-in-Chief, confirming the final rejection of claims 1 to 3. These claims are as follows:-

1. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of brittle material substantially harder than sapphire substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.
2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a rounded point and a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.
3. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of brittle material substantially harder than sapphire substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, and that portion of the stylus within the holder being irregular and unfinished, substantially as described.

The article covered by the appealed claims consists of a phonograph stylus formed of a piece of very hard

and brittle material, such as a small splint of diamond, having one end shaped to fit the minute undulations of the groove of a sound record and the portion adjacent said end formed conically, and a soft metal holder for the stylus in which the latter is enclosed with its conical end projecting from one end of the holder. The end portion of the soft metal holder in which the stylus is mounted is also shaped conically with its conical surface merging into the surface of the conical end portion of the stylus. In this manner the stylus is given the maximum amount of protection for a minimum amount of surrounding material of the holder.

The Examiners-in-Chief in their decision stated that in the device disclosed in British patent to Jungbecker No. 12456 of 1902, the outside holder did not have a conical surface merging into the conical surface of the stylus c, but, notwithstanding this statement, they hold that the conical surfaces of the stylus and holder of Jungbecker practically merge and that there is nothing patentable in making them exactly merge, especially in view of the practice of shaping lead pencils so that the cone part of the wood merges into the cone part of the brittle lead.

It is respectfully submitted that the Examiners-in-Chief are in error in so holding. In the device disclosed by Jungbecker, the conical surfaces of the holder and stylus do not practically merge as the body portion of the jewel c, preferably of diamond, projects a considerable distance from the holder a and there is an abrupt shoulder be-

tween such projecting portion of the jewel c and the end of the holder a. This structure lacks all the advantages of applicant's invention. A diamond splint, such as used in applicant's device, is brittle and exceedingly small in cross section, and if the body portion thereof extended from the stylus holder to an appreciable extent, as is Jungbecker, the stylus would be easily broken when ground and also when in use on a phonograph in reproducing. Styli formed of pieces of diamond large enough to withstand the strains imposed thereon during grinding and when in use on a phonograph, if mounted in the manner disclosed by Jungbecker, would be so expensive as to render the use thereof prohibitive.

Applicant's invention, while of a simple nature, is highly meritorious. It renders the use of diamond for phonograph styli practicable, as but a comparatively small amount of grinding is necessary to properly form the tracking end of the exceedingly small, brittle stylus, and the latter is fully protected during grinding and when in use, by the surrounding conical end portion of the soft metal holder. Moreover, as only the extreme end or tip of the stylus projects from the holder of applicant's device, small pieces or splints of diamond of practically any shape may be employed with equally good results.

For reasons already stated, it is contended that Jungbecker's device is a failure. Moreover, while the



advantages to be derived from the use of diamond for a phonograph stylus were recognized long prior to Jungbecker's invention, neither such a stylus nor a stylus formed of material substantially harder than sapphire ever appeared commercially until the invention of the construction described in the appealed claims. Since applicant's invention, however, many thousands of such styli have been made and successfully used for several years. These facts are most significant and lead irresistibly to the conclusion that Jungbecker's device is unsatisfactory and a failure. Jungbecker, therefore, is not an anticipation of applicant's invention as defined in the claims appealed. See *Lynn Non-Skid Co. vs. Edward V. Hartford Co. Inc.*, 247 F. 524, 535, in which the Court held:

"A failure in the prior art cannot, by a modification, be made to stand as an anticipation of a successful device."

It is true that the holder of applicant's structure protects the stylus much in the same manner as the wood of a lead pencil protects the lead. As a matter of fact, this feature of similarity was pointed out in applicant's specification as filed, page 7, first paragraph. Lead pencils and phonograph styli, however, are in entirely foreign and unrelated arts and the functions thereof are dissimilar. Obviously, a lead pencil is neither intended nor adapted to perform the functions of a phonograph stylus. Attention is directed in this connection to the following decisions:-

Moore vs. Schaw et al., 118 F. 602, in which the Court held:-

"A device relating to one art is not anticipated by a like device taken from an entirely foreign art, where the latter was not intended by its maker, nor actually adapted, to perform the functions of the former."

National Meter Co. vs. Neptune Meter Co., 122 F. 75, in which it was held that water motors and water meters were in essentially different arts.

In the first of the cases just referred to, the patent sued on related to a device for use in riveting the circumferential seams of the sections of a pipe line, and one of the references principally relied upon by the defendant as an anticipation thereof was for an apparatus for caulking the joints of pipes and mains. The court, in discussing this reference, stated that the apparatus disclosed therein "has no relation to the art of pipe line riveting", and accordingly held that the complainant's device amounted to invention.

It is submitted that apparatus for riveting pipe line seams and devices for caulking joints of pipes and mains, and also water meters and water motors are more closely related than are lead pencils and phonograph styli.

Nor would a lead pencil suggest applicant's construction to one skilled in the art of phonograph styli. If the contrary were true, why did not some one adopt this construction long prior to applicant's invention? As was said in Potts vs. Cresger, 155 U. S., 597:

"It often requires as acute a perception of the relation between cause and effect, and as much of the peculiar intuitive genius which is a characteristic of great inventors, to grasp the idea that a device used in one art may be made available in another, as would be necessary to create the device de novo".

There are certain features of applicant's device which are not described in any of the appealed claims, and the Honorable Commissioner is therefore respectfully requested to consider and approve the additional proposed claims submitted herewith, and annex to his decision a recommendation that these claims be entered and allowed by the Principal Examiner, the art permitting, upon a proper amendment being submitted by applicant. The proposed claims are as follows:-

4. A new article of manufacture comprising a comparatively soft metal holder and a phonograph stylus of brittle material substantially harder than sapphire substantially enclosed within said holder, one end of the holder and the enclosed stylus being provided with a cone portion having a continuous conical surface, said surface being formed partly on said holder and partly on said stylus, the end of said stylus being rounded to fit the groove of a sound record, and the said conical surface running smoothly into the surface of the rounded end of the stylus, substantially as described.

5. A new article of manufacture comprising a comparatively soft metal holder and a phonograph stylus formed of a very small splint or piece of diamond substantially enclosed within said holder, one end of the holder and the enclosed stylus being provided with a cone portion having a continuous conical surface, said surface being formed partly on said holder and partly on said stylus, the end of said stylus being rounded to fit the groove of a sound record, and the said conical surface running smoothly into the surface of the rounded end of the stylus, substantially as described.

In addition to the features described in appealed claims 1 and 2, each of the foregoing claims specifies a

soft metal holder for the stylus, and describes the stylus as rounded at its end to fit the groove of a sound record, with the conical surface formed on the holder and stylus running smoothly into the surface of the rounded end of the stylus. Claim 5 also specifies that the stylus is formed of a very small splint or piece of diamond.

Respectfully submitted,

THOMAS A. EDISON

By Oyer and Holden  
His attorneys

Orange, N. J.

September , 1918

ADDRESS ONLY  
THE COMMISSIONER OF PATENTS  
WASHINGTON, D. C.

2-003

Letter No.

WAG

DEPARTMENT OF THE INTERIOR  
UNITED STATES PATENT OFFICE  
WASHINGTON

September 25, 1918.

In the matter of the  
Application of  
Thomas A. Edison,  
Phonographs;  
Filed July 27, 1914  
Serial No. 853,283.

)  
)  
) On Appeal to  
) the Commissioner.  
)

Sir:

Please find enclosed herewith a copy of the  
decision of the Assistant Commissioner, dated Septem-  
ber 24, 1918, in the above entitled case.

By direction of the Commissioner:

Very respectfully,

*M. A. L. +*

Chief Clerk.

F.

Thomas A. Edison,  
c/o Lyster and Holden  
Edison Office Bldg.,  
Orange, N. J.

RECEIVED BY



Hearing:  
Sept. 23, 1918.

HDB

United States Patent Office.

Ex parte Thomas A. Edison.

Application for Patent.

Appeal from Examiners-in-Chief.

Phonographs.

RECEIVED BY



Application filed July 27, 1918, No. 855,285,

Messrs. Dyer & Holden for applicant.

The applicant appeals from an affirmation of the Examiner's rejection, for want of invention, of certain claims to a phonograph reproducer stylus sufficiently illustrated by the following:

2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a rounded point and a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.

The structure claimed differs in no essential respect from that in the British patent to Jungbecker, 12,456 of 1902, nor from that in the patent of Emerson, 736,948, of Aug. 25, 1903, except in specifying a particular

material for the hard wearing point. Any good mechanic being instructed (by Jungbecker) to embed a diamond point in a conical-ended cylindrical support and grind the diamond to a cone would naturally grind the support and diamond point together in a continuous cone. No invention is necessary. The decision of the Examiners-in-Chief is affirmed.

*T. W. H. C.*

Assistant Commissioner.

SEP 24 1918

*Mr Hardy Legal Dept*

April 10, 1917

Mr. Edison:-

FOLIO 993

I am sending you herewith our copy of your application  
Serial No. 853,283, filed July 27, 1914, entitled Phonographs.

All the claims in this application are article claims  
covering the stylus and holder therefor shown in Figure 11 of the  
patent drawing and are under final rejection. These claims read  
as follows:-

*See other sheet*

1. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of very hard material substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.

2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a rounded point and a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.

3. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph stylus of very hard material substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, and that portion of the stylus within the holder being irregular and unfinished, substantially as described.

Each of the claims distinguishes from British patent No. 12456 of 1902 to Jungbecker, which is the closest reference cited, by specifying that the stylus holder and enclosed stylus are pro-



vided at one end with a cone portion having a continuous conical surface, which surface is formed partly on the holder and partly on the stylus. The Examiner contends that there would be no invention in making the conical surfaces of the holder and stylus as shown in the drawing of the Jungbecker patent a continuous conical surface and that the extra material thus added to Jungbecker's structure would provide but little additional strength in supporting the stylus. The Examiner further states that this feature has already been made use of in lead pencils, and its use in the structure disclosed in this application would not be invention.

I understand that this feature is still used in our diamond stylus mountings. A patent has already been granted to you on the method or process of making the stylus and mounting therefor shown in Figure 11 of the drawing in the present application.

The further prosecution of this application necessitates the taking of an appeal, the expense of which is \$10.00, on or before April 25, 1917. Will you kindly advise whether you wish such an appeal taken or the case abandoned.

WH-JS

*Wm. A. Hardy*

*I think this is a good minor invention & they let thousands out with less merit Appeal & fight for it*  $\Sigma$

*Not correct  
Customers would  
break them easy*

*Hardy*  
*Think we should fight + get*  
*this if possible*  
Mr. Edison:-

June 28, 1918

FOLIO 992 *703*

I am sending you herewith our copy of your application Serial No. 853,283, filed July 27, 1914, entitled Phonographs.

The three claims in this application cover the article consisting of the stylus and holder therefor shown in Figure 11 of the patent drawing. Claim 2, which is illustrative, reads as follows:-

2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a rounded point and a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.

All the claims in the application were finally rejected, and on appeal the Examiners-in-Chief affirmed the final rejection. The principal patent relied upon was the British patent to Jungbecker No. 12456 of 1902, but each of the claims in the application distinguishes from this patent by specifying that the stylus holder and the enclosing stylus are provided at one end with a cone portion having a continuous conical surface, which surface is formed partly on the holder and partly on the stylus. You will note that in the patent to Jungbecker there is an abrupt shoulder between the conical surface of the stylus and the conical surface of the holder. The Examiners-in-Chief in their decision, however, held that the conical

surface of the holder a of Jungbecker practically merged with the conical surface of the stylus c, and that there was nothing patentable in making these surfaces exactly merge, especially in view of the everyday practice of so sharpening lead pencils that the cone part of the wood merges into the cone part of the pencil lead for the same purpose that your cone stylus merges into the cone of the soft holder.

The decision of the Examiners-in-Chief was written by present Commissioner Newton, who was then on the Board. In view of this fact, if an appeal is taken from the decision of the Examiners-in-Chief, such appeal will not be heard by the Commissioner but by one of the Assistant Commissioners. Do you wish such an appeal taken, or the case abandoned?

WH-JS

*Wm. A. Hardy.*

October 11, 1918

Mr. Thomas A. Edison:-

FOLIO 993

I am sending you herewith our copy of your application Serial No. 853,283, filed July 27, 1914, entitled Phonographs. The three claims in this application cover the article, consisting of the stylus and holder therefor shown in Figure 11 of the patent drawing. Claim 2, which is illustrative, reads as follows:-

2. A new article of manufacture, comprising a holder of comparatively soft material and a phonograph diamond stylus substantially enclosed within said holder, the holder and enclosed stylus being provided at one end with a cone portion having a rounded point and a smooth continuous conical surface, said surface being formed partly on said holder and partly on said stylus, substantially as described.

All the claims in the application were finally rejected and on appeal the Examiners-in-Chief affirmed the final rejection. An appeal was <sup>then</sup> taken from the decision of the Examiners-in-Chief to the Commissioner of Patents. ~~and~~ This appeal was heard by Assistant Commissioner Clay, who affirmed the decision of the Examiners-in-Chief, holding that no invention was necessary to produce the structure claimed in view of British patent to Jungbecker No. 12456 of 1902, and U.S. patent to Emerson, No. 736,948, dated August 25, 1903. A copy of the decision of the Assistant Commissioner is attached hereto.

-2-

The only further action that can be taken in this case is an appeal to the Court of Appeals of the District of Columbia. In view of the adverse decisions of the Examiners-in-Chief and the Assistant Commissioner of Patents, however, and also in view of the very slight difference in the article covered by the claims from the disclosures in the patents to Jungbecker and Emerson, it is almost a certainty that the Court of Appeals would affirm the decision of the Assistant Commissioner. I therefore advise against taking such an appeal and recommend that the case be abandoned. Kindly advise.

WAH-JS

OK Drop it  
7/29



**Patent Series**  
**Patent Application Files**

Folio # 997      Storage Battery

U.S. Patent #:    1299693

Primary Applicant: Edison, Thomas A

Date Executed:    8/6/1914

Handed to me  
by Mr. Edison today.  
Aug. 6, 1914. R. B.

Aug 8 1914

The object of this invention is to increase the Capacity of the ~~an~~ Iron negative Element of the Nickel Iron Alkaline Storage battery

The invention consists in adding ~~substance~~ Tin monoxide to the finely divided iron reduced by hydrogen as explained in my patent

The Tin ~~an~~ monoxide is added to the powdered iron should be in a very fine state & thoroughly mixed therewith.

~~This is the~~ ~~the~~ ~~most of the~~

2

Exceedingly finely divided tin itself may be used instead of the Monoxide, but it is cheaper & more convenient ~~use~~ to use the Monoxide,

The addition of the tin improves the Capacity of the iron under the conditions of the ordinary storage cell about 30%. It assists in keeping the average voltage higher,

Even 10% of Tin monoxide will show considerable improvement but I prefer to use 20%. a larger amount can be used still further improving the output but the increased capacity

3

is obtained at too great an  
expense for Tin -

~~The improvement is expected  
due to the tin being used for iron &  
mercury~~

Claim the use of a small  
quantity of Tin mixed with  
iron ~~is~~ to form the  
negative element of the  
Iron Nickel Alkaline storage  
Battery

cells with Iron & Mercury  
to form the neg element

Comb with Nickel + Iron  
with Tin -



**Patent Series**

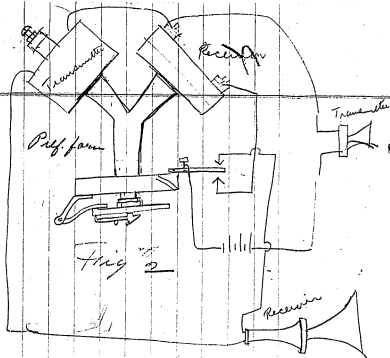
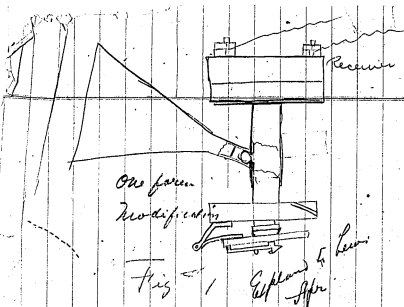
**Patent Application Files**

Folio # 1009      Phonograph

U.S. Patent #:    1229749

Primary Applicant: Holland, Newman H

Date Executed:    9/14/1914



W/H Holland  
April 10/13

In recording on the phonograph where a single diaphragm has both recording & reproducing points

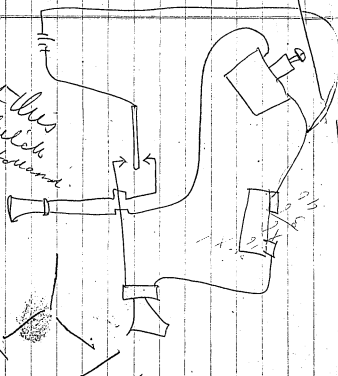
Fig. 1 shows where the record is reproduced through a horn which has a valve to cut off the horn when the recording point is engaged

Fig. 2 shows a switch to change current from transmitter to receiver according to which point is in use

How does valve work in fig I when reproducing? (Lilt difference)

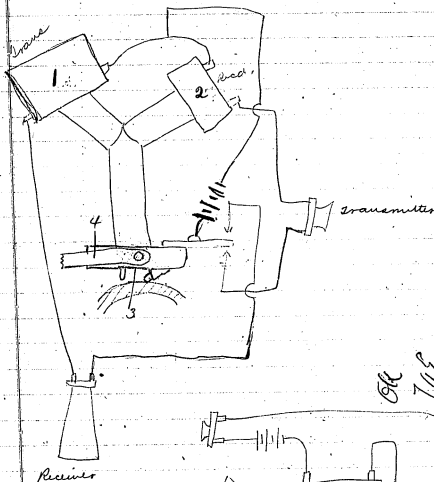


Use this  
sketch  
reference



Top.

Holland



OK  
Tag

Inv. Holland

The invention consists of a magnetic transmitter and magnetic reproducer 2 connected to a single diaphragm 3 which has both a recording and reproducing point said diaphragm being pivotally mounted in stationary bearings 4 in such a manner that by rocking the diaphragm about its pivots either the recording or reproducing point may be brought into contact with the record at the same time throwing the switch from the receiving circuit to the recording circuit or vice-versa.

Fig 2 shows a modified form having a magnetic recorder 4 and a non-magnetic reproducer in the form of a horn 5 having a ball valve 6 the throat 7 of which is closed when the recorder circuit is closed.

When the reproducing point is brought into contact with the record the horn 5 is tilted downward allowing the ball to roll from the throat opening thus open the valve & allowing the sound "to escape from the mouth of the horn."

**Patent Series**  
**Patent Application Files**

Folio # 1012      Mold for Sound-Records

U.S. Patent #:    1326330

Primary Applicant: Edison, Thomas A

Date Executed:    10/9/1914

July 3, 1918

Mr. Edison:

IN RE: APPLICATION Serial No. 866,437, filed Oct. 13, 1914  
MOLDS FOR SOUND RECORDS

The following claim -

A mold for sound records comprising a matrix and backing pressed towards each other, secured together and having their adjacent faces trued and polished to forms fitting each other evenly, whereby the formation of irregularities on the outer face of the matrix is prevented, substantially as described.

has been finally rejected and covers the idea of truing and polishing the adjacent faces of a matrix and backing so that when pressed together irregularities will not form on the outer face of the matrix. The construction is one we are now using.

The patent to Wickes, herewith, is cited against the claim but the idea of truing and polishing is not found therein. It is possible that the Board on appeal would hold that the above difference between the construction of the patent and our construction is patentable in view of its advantages although it is a very close question.

Do you want to appeal?

Chas. H. Kiser

OK-EH

Appeal it = Don't forget that  
With Zig Zag record like the Victor used that  
irregularities such as small points showing  
up, do not sound when reproducing because  
movement is side ways whereas with  
our up & down record they give ~~more~~  
round - circular. They use a Vented disc which  
are only semi-plotted & give much more pressure  
than the zig zag record

Charles H. Kiser -

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**END**

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We thankfully acknowledge the vision and support of Rutgers University and the Thomas A. Edison Papers Board of Sponsors.

This edition was made possible by grant funds provided from the New Jersey Historical Commission, National Historical Publications and Records Commission, and The National Endowment for the Humanities. Major underwriting has been provided by the Barkley Fund, through the National Trust for the Humanities, and by The Charles Edison Foundation.

We are grateful for the generous support of the IEEE Foundation, the Hyde & Watson Foundation, the Martinson Family Foundation, and the GE Foundation. We acknowledge gifts from many other individuals, as well as an anonymous donor; the Association of Edison Illuminating Companies; and the Edison Electric Institute. For the assistance of all these organizations and individuals, as well as for the indispensable aid of archivists, librarians, scholars, and collectors, the editors are most grateful.

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ISBN 978-0-88692-887-2

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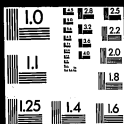
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